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GEORGE H. KRESS, M. D.
EMMA W. POPE, M. D.
Editors

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TREATMENT OF INJURIES OF THE HAND*

By STERLING BUNNELL, M. D.
San Francisco

DISCUSSION *by George Warren Pierce, M. D., San Francisco; Harlan Shoemaker, M. D., Los Angeles.*

THE work of examining and reconstructing many crippled hands, largely in the field of industrial injuries, has impressed me with certain aspects of the early treatment of hand injuries that determine success or failure in the end-results. These critical points I will attempt to emphasize.

In the primary treatment of lacerated and crushing wounds the value of excision of all traumatized tissue, which is popularly termed *debridement,* is thoroughly established. A wound undebrided and left with a traumatized and dirty surface is destined to go through a stage of infection and sloughing, which prolongs the time of disability and by the excess of infection jeopardizes the hand. The object in debriding is to excise all damaged and infected tissue. The wound should be sterilized with tincture of iodin before and after the debridement. The field should be rendered bloodless by a tourniquet so the tissues can be seen intimately and so that infection will not be carried about by sponging. Curved, double-pointed scissors with thin, flat blades facilitate the excision.

If the debridement is thorough, the wound, which is now lined with only clean healthy tissue, may be closed by suture, using a small drain to prevent collection of blood and serum if indicated. When there is doubt as to the thoroughness of the debridement the stitches may be placed far apart and drainage may be encouraged by a warm compress of boric solution with one-half per cent of sodium citrate. The latter is added as it keeps the vents open for drainage by preventing coagulation of lymph.

If the wounds are too dirty or overly traumatized they should be only partially closed or left open. Antitetanic serum should not be forgotten, especially in puncture wounds which furnish anaërobic conditions.

If a *joint* is open careful debridement will usually allow primary closure and thus save the joint. The joint should be closed even if a small skin flap is necessary to cover it in.

Severed nerves in fingers and hands, due to their importance, should not be overlooked. Primary suture of these is not advisable, as the healing of traumatized wounds is usually not 100 per cent perfect, just as the scars from sutured lacerations are broader and more cicatricial than those after clean surgery. In the repair of sutured nerves the quality of the healing is no exception.

Considering that after nerve suture one must wait a year or more for regeneration to be complete, and that the amount of regeneration that will be obtained is directly dependent on the degree of perfection of the union of the severed nerve ends, the patient is entitled to the best union that can be obtained. Therefore nerve sutures are best done in secondary operations under perfect aseptic conditions and when they are not under the effect of recent trauma. After a fresh injury the ends of the nerves should merely be joined by one stitch of fine catgut, so they will remain unretracted and in apposition for future accurate suturing.

Severed tendons present a different problem. Primary suture of tendons has two advantages over secondary suture, in that the tendon sheath is still present and the tendon ends can be drawn together. In late cases the sheath becomes obliterated in the gap between the tendon ends and the proximal tendon end is always retracted by the contracted muscle. It is possible, therefore, to unite a tendon within a finger immediately after an accident while it is not possible to do so with success in a secondary repair. This is because in the latter adhesions will form about the tendon repair at the site where the sheath has been obliterated and the muscle will have become so permanently contracted that the tendon ends cannot be approximated. To succeed in the primary suture of a tendon within a finger requires normal, clean tissues, and a special and exacting technique. Unless these conditions are present it is better to let the tendon alone when it is severed within a finger for a later surgical repair.

If in primarily uniting severed tendons in the hand or forearm too much time, trauma and suture material are used and debridement is omitted or carelessly done, infection will follow and the result will be disastrous. The wound will all break down and be worse than ever; segments of tendon will slough out, and if silk is used, suppuration will last for months until the silk is extruded. Therefore if conditions are not so that the primary repair can be done right, severed tendons are best left unsutured.

When crippled hands come for reconstruction it is usually better if primary repair of the tendon had not been attempted, as the large amount of scar tissue that is generally left will greatly de-

*Read before the San Francisco County Medical Association, January 17, 1928.

tract from success in reconstructing. However, if the original debridement can be well done and the proper technique can be used, primary repair of tendons in the hand and forearm is advisable. If one is certain of his technique and the conditions are favorable, silk may be used, preferably Turner's braided silk No. 3. It is well to dip it in bichlorid solution to inhibit germ growth. Usually, however, chromic catgut is preferable as it is absorbable. If one uses a minimum amount of suture material and of trauma the chances of infection will be lessened.

A tendon should never be sutured after twenty-four hours have elapsed, even if the wound appears clean, as by that time each germ will have multiplied to many millions and infection is inevitable. Even within twenty-four hours if a smear from the wound shows cocci or an excess of pus cells the tendon should not be sutured.

Postoperatively after suture of flexor tendons the wrist should be kept in strong flexion for a month, so that the muscles will be robbed of their force but will still allow the fingers to move through full amplitude.

Fractured phalanges and metacarpals when united in faulty position greatly interfere with the mechanics of the joints and tendons, and so should always be placed in correct position early. Fractured ends that project toward tendons bind the tendons in callus. After a fracture tendons should be moved early to prevent the adhesions that will result from their contiguity with traumatized tissue. Gutter splints are useful for phalangeal fractures and if of aluminum will transmit the x-ray. A safety-pin splint is useful in straightening angulation. For metacarpal fractures, plaster casts, sheet metal splints, or rounded splints for gripping are advisable. Frequently, for phalangeal fractures, traction will be necessary and this can be accomplished by adhesive plaster, celluloid or resin glue on the finger, a wire through a hole in the finger nail, or a tiny pair of tongs in the distal end of the middle phalanx. Countertraction may be obtained from a cock-up splint, from a plaster cast on the hand and forearm, or from a wire splint so bent as to rest on the adhesive covered webs between the fingers. If the other fingers are held in the same position as the fractured one, the tendon in the injured finger will not have a chance to angulate the fracture.

Fractures of the *carpal bones* usually unite, with the exception of that of the scaphoid. Even the latter, if in exact position, will generally unite in three months if the cast immobilizes the hand, lower part of the forearm and full length of the thumb, with the thumb in strong abduction. This jams the broken surfaces together and holds them immobile, just as in the abduction method of treating a fracture of the neck of the femur. If not in perfect position, or if primary union does not take place, both fragments should be removed without further delay.

In *amputating fingers* the scar should be placed posteriorly, and if through a joint the cartilage should be shaved off. If left, the skin may be too movable and infection if present will be greatly prolonged. Hypersensitive neuromata in finger stumps are so common that the two nerve ends should be trimmed short and always be injected with alcohol so as to prevent the growth of the axones.

If the heads of the metacarpals of the long or ring fingers are amputated the axes of the contiguous metacarpophalangeal joints will rotate toward each other, so that the fingers will cross over each other when flexed. Therefore if either of these heads needs removal the whole of the metacarpal should be removed. A tendon should not be attached to a finger stump, as it will then be impossible to close the fist, because the common muscle will thus be prevented from pulling the tendons of the other fingers. Therefore let the tendon go free to form its own attachment.

It is not advisable to attempt to build up a finger stump by a dressing of clotted blood, as such a stump is scirrhotic and not workable. If the bone does not project and the skin is too short for closure, the stump may be closed by an immediate Thiersch graft, and where the bone projects the immediate application of a pedicle skin-graft will give a longer finger. A stump with a good soft termination, however, even if the finger is shortened by trimming the bone, is better for work than is one that is scirrhotic and painful.

HAND INFECTIONS

Statistics show that most of the severe infections come from trivial wounds done in light forms of work, and that 90 per cent of them reported for treatment late. Serious injuries usually have medical aid at once and so escape. Severe infections can largely be avoided if injured workers report early to a doctor or trained nurse for even trivial injuries. Early applications of tincture of iodin have reduced infections 38 per cent, and radical early treatment is the most economical for all concerned. Most bad infections also have been treated for a long time ambulatorily and by inadequate incisions. All severe infections, and especially those of tendon sheaths or fascial spaces, should be placed at once in a hospital and there operated upon under general anesthesia, with the ischemia of a tourniquet. Incisions should be adequate and chosen with a thorough knowledge of the anatomy of the paths of infection and the sheaths and spaces in the hand.

As much definite knowledge of infections of the hand has been available for fourteen years we should be familiar with the boundaries of the various spaces where pus collects, the definite pathways along which it travels, the diagnosis of each, the best surgical approaches and the means of preserving function.

A *felon* in the pulp of a finger cannot be drained through a median incision, as the pus will continue to point to the sides dorsally. The incision should open the finger like the mouth of an alligator and with the scar away from the tactile surface and with care not to puncture the thin membrane separating the pulp space from the

tendon sheath. If the pus has remained under pressure the distal two-thirds of the phalanx will have become necrotic, because distention in the pulp space robs it of its blood supply. If so, it should be snipped off. The epiphysis is outside of the space and generally lives.

A *paronychia* usually persists because the white moon of the nail, which is a space (we might call it the ungual bursa), is infected and the base of the nail acts as a foreign body. Two lateral incisions made under ethyl chlorid should be at the very depths of the creases at the sides of the nail where it curves strongly. After removing the nail, daily packing of gauze with ammoniate of mercury ointment should be kept in the very depths of the fold under the dorsal flap. Healing will be complete in two weeks.

Hand infections require careful diagnosis, just as do infections within the abdomen, and usually yield at once to proper surgery.

If the hand before us shows a soft, edematous, red, painful swelling and red lines run around to the dorsum and up the arm—those from the ulnar side of the hand to the epitrochlear gland and those from the radial side on up to the axilla—the case is one of *lymphangitis* and differs in treatment from all other types of hand infections. It may start from a small superficial infection, but its main area of redness is of soft edema and it lacks the firm and indurated feeling characteristic of pus. Such a hand should be opened only at the small original focus and be promptly treated in a hospital with large wet compresses. The whole should be wrapped in a blanket with hot-water bags inside. These infections are dangerous, but usually twenty-four hours of this treatment will place the infection under control. Incisions in simple lymphangitis are unnecessary and harmful. When abscesses form at the lacunae of the lymphatic vessels, or in the case of lymphangitis of the deeper tissues, indurated plaques of cellulitis are formed, then and not before, should incisions in the indurated areas be made.

If our case is one of infection in the *tendon sheath* it is diagnosed by general swelling of the finger which will be held in slight flexion, as voluntary movement is painful. Passive extension will be impossible on account of pain. There is fever, and over the tendon sheath is extreme tenderness, with its maximum at the proximal end of the sheath over the head of the metacarpal. Incisions should be midlateral in the finger and, to avoid cutting the pulleys which are opposite the phalanges, should be opposite the joints. In the palm, the proximal end of the sheath should be opened.

Thenar space infection is recognized by the great ballooning of the thenar eminence, by direct tenderness and by noting the source of the infection to be in the index finger or thumb. This space is opened along the flexor crease of the thenar eminence and dorsally in the first cleft radial to the first interosseus muscle. Care should be used not to sever the nerve to the radial side of the index finger or the small motor thenar nerve on which the power of opposition of the thumb depends.

Pus in the *middle palmar* space gives local tenderness and bulging of the palmar area which is normally concave. The source is usually in the long, ring and little fingers subcutaneously or in their sheaths. The fingers whose tendons run through the infected thenar or middle palmar spaces are held semiflexed and if passively extended cause pain, thus differing from tendon sheath infection, in which the patient will not even allow extension. The incision is L-shaped partially following the creases in the palm until through the palmar fascia and from then on longitudinally by blunt dissection so as to protect the nerves.

From the palmar space or sheath of the little finger pus extends to the *ulnar bursa* which runs to just above the wrist. Pus from the thenar space or sheath of the flexor tendon of the thumb or index finger extends to the *radial bursa*. The two usually communicate. The wrist is then held fixed and with infection of the ulnar bursa there is extreme tenderness in the palm an inch and a quarter proximal to the ring finger.

From these two bursae, and especially the ulnar, within two days pus will extend to the large quadrilateral space in the forearm. This holds eight ounces and lies between the profundus tendons in front and the pronator quadratus muscle and interosseus ligament behind. There is swelling, starting above the annular ligament of the wrist. The space is opened by lateral incisions in the forearm an inch above the wrist and just anterior to the radius and ulna. The pus follows up the ulnar artery and median nerve and may necessitate a second opening higher in the forearm between the ulnar artery and the flexor ulnaris muscle.

In a finger the partition between the *middle finger joint* and the sheath of the flexor tendon is thin, and frequently infection from the sheath infects this joint and also causes osteomyelitis of the *middle phalanx* by entering at the epiphyseal line. Conversely also the sheath becomes infected from the middle finger joint.

Infection in the *carpus* is detected by the pain and grating on movement and by a dorsal swelling in the normally concave area between the insertion of the extensor tendons of the wrist and the extensor communis tendons. Aspiration here yields pus. If from simple drainage the condition does not promptly yield, it is usually best to remove all the carpal bones.

The *dorsum of the hand* is normally so swollen from palmar infection because of the loose tissue that it is often unnecessarily incised. Only occasionally are its two spaces, the subcutaneous and beneath the tendons the subaponeurotic space, infected and then they should be drained laterally.

In the hand at the *web* between the fingers a pad of fat anterior to the palmar fascia communicates with another pad posterior to this fascia, and

as infection from one extends to the other, both spaces should be opened.

In the hand pus normally *travels in a serial way*—from flexor tendon sheaths in the finger to fascial space in the palm or to the middle finger joint and middle phalanx—from subcutaneous regions in the finger through the lumbricali canal to the palmar space—from sheaths of the little finger and thumb to the ulnar and radial bursae and to each other, and from these and the palmar and thenar spaces to the deep quadrilateral space in the forearm. From the original site we know where the infection is likely to travel and can forestall it.

Wrist and finger joints are held stiffly if pus is near them, and tendons are painful on movement if running through a pus-filled space and extremely so if through an infected sheath. Accurate outlining of tenderness is useful and so also is differentiating between edema and induration. Tenderness and pain diminish in a few days, as the tissues become pus-soaked.

SUMMARY

Incisions should be well chosen and of adequate size. We should not sever the pulleys in the fingers, nor cut the nerves in the fingers or palm, especially the motor thenar nerve. The most pernicious incision, and unfortunately the one usually made, is the median longitudinal one, whether in the palm, wrist, finger, pulp, matrix, or the dorsum of the finger. It wrecks the hand, causes flexion contractures by being at right angles to the flexion creases, cuts the pulleys, places roughening and adhesions along the worst place, namely, the gliding surfaces of the tendons, and is poor for drainage. In fingers, incisions should be midlateral and not anterolateral, as are often pictured, where they will cut the nerves, and they never should be in the midline. In the hand they should follow as much as possible the natural creases.

Drains should not be left in longer than two days, and large, hot compresses of boric acid solution with one-half per cent sodium citrate, together with local and bodily rest, should follow. If kept too long hot compresses overstimulate granulations and cause adhesions. After about a week baths are used. These help active motion which should now be encouraged. Antiseptic chemicals should be avoided as they kill the tissues as well as the germs. Precautions should be taken in using compresses or baths not to transmit virulent germs from one patient to another. Also the skin surrounding a wound should be kept free from crusts and piled up epidermis by curetting and cleansing so it will be clean even down to live tissue which can protect itself. Otherwise germs will breed in the surrounding débris and keep the wound infected. As healing progresses the hand should be kept, when not exercising, in a functionating position by splints, with the wrist cocked up, the proximal finger joints flexed, and the thumb in opposition.

In the treatment of hand injuries certain prevalent mistakes should be emphasized:

Do not suture a traumatized wound without debriding.

Do not incise the hand without the intimate vision gained by using a tourniquet, as clean spaces and sheaths may be opened to infection and nerves and other important structures may be cut.

Do not traumatize the tissues of the hand, as it clogs working parts with cicatrix.

Never be guilty of making the pernicious median longitudinal incision.

Never cut nerves in the fingers and palm, and especially the thenar nerve.

Infection is almost inevitable if tendons are sutured more than twenty-four hours after an injury.

Do not neglect to diagnose exactly an infection in the hand.

Do not treat a sheath or space infection, or a case of lymphangitis, in an office.

Do not use local anesthesia on infections except just in the line of the incision, as it spreads infection.

Do not make inadequate incisions for infections.

Always keep joints in functionating positions during healing.

516 Sutter Street.

DISCUSSION

GEORGE WARREN PIERCE, M. D. (490 Post Street, San Francisco).—This masterly paper is of the utmost importance to all members of the profession who at any time are called upon to repair an injured hand or to treat an infection of the upper extremities.

Far too little importance is attached to hand injuries by the average practitioner, and lack of knowledge of *all* the finer points of technique analyzed in this paper will result in permanent loss of function in the hand, that delicate and beautifully balanced mechanism. Commonest sins of omission are the *immediate* debridement, failure to reorganize severed tendons, and improper opening of infections of the fingers and the palmar spaces. I can agree with Doctor Bunnell almost without exception in every detail as to his methods of treatment.

I again urge a complete and careful study of this paper, to the general practitioner, as it is to him that a large number of these injuries and infections come, and on his judgment at that time so much depends on the ultimate result.

HARLAN SHOEMAKER, M. D. (1930 Wilshire Boulevard, Los Angeles).—The debridement of crushing wounds of the hand with laceration is most excellently set forth in this paper. The necessity of curved, pointed, flat scissors which will cut to the points will never be more appreciated by the operating surgeon than in cases of this type.

Tetanus serum adds very largely to the safety of the patient's life, and in doubtful cases repetition of the dose in seven days is good prophylaxis.

The immediate closure of open joints without drains is essential to the restoration of full function in the joint. Also by the primary suturing of nerves and tendons, even though infection occurs in these cases, contracture is prevented and subsequent stretching of the nerve or tendon is eliminated. Triple 0 plain catgut suture material is as efficacious as nonabsorbent mate-

rial. The profession has been too slow in taking up the use of finer suture materials. As the contraction of tendons is greater than nerves, the flexion of the joints adds very materially in overcoming this temporary defect.

The treatment of injuries to the hand, particularly in the injuries to the metacarpals, is most excellently brought out. The particular stress laid on the early treatment in minor injuries to the hand is important, and the method and care of a debridement of the wounds is most clearly elucidated.

I am impressed that in an infection of the finger nail no deformity will follow or remain after the removal of the nail if the matrix has not been injured.

Great stress has been laid on the care of opening abscesses of the hand and preservation of the nerve supply. This is particularly important as the nerves are mostly sensory in type and their destruction is followed by great disability and atrophy of the hand which largely impair its function.

Attention has been called to the site of opening palmar abscesses as the lateral side of the tendon sheath. The paper clearly points that the sheath and tendon are not involved and if the operating surgeon is careful, infection will never be carried into this anatomical structure.

The use of local anesthetic at some distance from the area of infection for the purposes of nerve block is a recommendation that all may profitably follow.

The use of heat in the stimulation of tissue repair or absorption of exudate and transudate is very important, but should not be excessive and cook the tissues. Neither should antiseptics be so strong as to be escharotic. Inasmuch as the hand may be worth from $1800 to $25,000 a year to the injured patient, Doctor Bunnell wisely recommends early hospitalization in hand cases. This is worthy of more emphasis; there is so much to be gained, and everything to be lost.

SUBACUTE BACTERIAL ENDOCARDITIS*

PART I

By ERNEST C. DICKSON, M. D.
San Francisco

WE learn from the medical dictionary that the term "endocarditis" means inflammation of the endocardium, whether it be the endocardium which lines the walls of the heart chambers or that which covers the valve cusps. It is obvious that it does not include the large group of lesions which are commonly called chronic endocarditis, in which there is inefficiency of heart function because of distorted heart valves, the result of healing of an inflammatory process which has ceased to be active. It is unfortunate that the use of the term "endocarditis" in this sense has become so general because it misleads as to the actual pathology which exists in the heart, and it necessitates specific definition whenever the word is used. One does not speak of a deformed extremity, the result of healing of a fracture with the bone fragments in malposition, as a chronic fracture, nor of the deformity which is produced by contracture following healing of an extensive burn as a chronic burn. It is no more logical to speak of deformed heart valves in which there is no active inflammatory process as chronic endocarditis, and in this report such lesions will be described as chronic valvular disease or healed endocarditis.

Again, when one discusses bacterial endocarditis, one must exclude all cases in which the disease of the endocardium is not of bacterial etiology. The most obvious group of this type is that in which the infecting organism is the treponema pallidum, but there is some question as to whether rheumatic endocarditis should not also be excluded. Despite the claims of Poynton and Payne [1] as well as of Coombs [2] and other authors, it is not definitely established that the endocarditis of rheumatic fever is of bacterial etiology, but for the sake of completeness it has been included in the proposed scheme of classification because it illustrates a peculiar type of endocarditis which may be of bacterial etiology.

The terms "acute," "subacute," and "chronic" are also commonly used in ways which are confusing. They may be used to indicate elapsed time, that is, the duration of illness, but they may also indicate the intensity or type of the inflammatory reaction in the tissues. It is true that there is often a close relationship between the duration of the illness and the intensity of reaction, but this is not constant in bacterial endocarditis. Wauchope [3] in a recent report states that in her series it was impossible to draw clean-cut lines between acute, subacute, and chronic infective endocarditis, either on clinical or pathological lines, and she adopted a time differentiation in describing her cases. She considered as acute all cases in which the clinical course was less than three months, unless—and this is important—there was postmortem evidence of organization of the vegetations on the valves, scarred infarcts, etc., in which case she classified them as subacute without regard to the duration of illness. Cases of from three to six months' duration she classified as subacute, and those of more than six months' duration as chronic.

Although this question is open to difference of opinion it would seem to be preferable to classify in terms of virulence of infecting organism and degree of reaction to infection, and in this report the terms, "acute," "subacute," and "chronic" are considered from that point of view. No differences in the duration of the illness are implied.

With these points in mind the following scheme of classification is proposed. It is not perfect, but may have some merit in that it emphasizes the virulence of the infecting organism and basic pathological processes as the indices for differentiation.

CLASSIFICATION

Bacterial endocarditis is an active inflammatory process caused by infection with bacteria in which the endocardium is the seat of the disease. The heart muscle is always, and the pericardium is usually, coincidentally affected in some degree. It adds much to the clarity of description if the name of the infecting organism is added, thus, acute pneumococcus endocarditis, subacute nonhemolytic or anhemolytic streptococcus endocarcarditis, and other conditions.

A. Endocarditis caused by infection of low virulence:

The inflammatory process is productive or proliferative and not destructive, and the tendency is to local healing and clinical recovery. Rheu-

* Part II of the paper will appear in the February issue of this journal.

TABLE 1.—*Relative Duration of Illness Among Cases of Bacterial Endocarditis*

DURATION	Pneumococcus Thayer		Staphylococcus aureus, Thayer		Gonococcus Thayer		Other Streptococci, Thayer		Streptococcus viridans, Thayer		Streptococcus viridans, Dickson and Cooke	
	CASES	%	CASES	%	CASES	%	CASES	%	CASES	%	CASES	%
0-1 week	6		8		0		16		0		0	
1-2 weeks	7		6		0		7		1		0	
2-3 "	7		5		2		5		1		0	
3-4 "	3		3		7		4		2		0	
	23	82.1	22	84.6	9	39.1	32	74.8	4	8.7	0	0.0
1-2 months	3		0		6		2		4		5	
2-3 "	1		1		4		2		1		9	
3-4 "	0		0		1		1		7		6	
4-5 "	0		2		1		2		7		7	
5-6 "	1		1		0		1		6		10	
	5	17.8	4	15.3	12	52.1	8	18.8	25	54.3	37	56.9
6-7 "	0		0		0		1		5		2	
7-8 "	0		0		1		0		1		1	
8-9 "	0		0		1		1		2		3	
9-10 "	0		0		0		1		4		3	
10-11 "	0		0		0		0		0		1	
11-12 "	0		0		0		0		2		2	
	0	0.0	0	0.0	2	8.7	3	6.4	14	30.4	12	18.5
Over 1 year	0		0		0		0		3	6.5	9	13.8
Unknown											7	10.8
TOTAL	28		26		23		43		46		65	

matic fever endocarditis is of this type, and it is unusual if a patient dies during the active stage of the disease unless there is mixed infection. In the process of local healing, however, there may be distortion and shrinkage of the valves resulting in permanent incompetency, even when actual healing is complete. It is because of the extra strain upon the myocardium due to the incompetent valves, and not because of progressive inflammatory processes in the endocardium, that cardiac failure may eventually develop.

B. Endocarditis caused by infection of moderate virulence:

There is considerable variation in the degree of virulence and in the duration of illness in this group, some cases being of a septic type with widely swinging temperature and frequent chills, while others run an uneventful course with low fever, no chills, and no signs of virulent infection. From the standpoint of pathology the process is progressive and is more or less destructive, but there is no rapid suppuration and there is a tendency to local healing behind the active process. Some authors, notably Libman,[4a] have described clinical recovery in a few instances, but all agree that the majority of patients die after a progressive course of from three months to a year after clinical diagnosis is possible.

Streptococcus viridans and *Bacillus influenza*† are the etiological factors in the vast majority of cases of this group, but a few cases of infection with gonococcus and, more rarely, with other types of streptococcus and pneumococcus may closely simulate this type in clinical course and pathological process.

C. Endocarditis caused by infection of high virulence:

The pyogenic bacteria, pneumococcus, staphylococcus, gonococcus and streptococcus pyogenes, are responsible for cases of this type, and in the great majority, with the possible exception of gonococcus endocarditis, the process is truly malignant and of relatively short duration. In most of these cases the endocarditis is not primary but is secondary to or metastatic from primary infection elsewhere, puerperal sepsis, pneumonia, osteomyelitis, etc. The process is typically destructive, there is no tendency to heal in the majority of cases and the progress of the disease is rapidly fatal, few patients surviving for more than a few weeks.

Table 1 shows the relative duration of illness in endocarditis of Groups B and C. Those produced by pneumococcus, staphylococcus aureus and "other" types of streptococcus are rapidly fatal; those caused by gonococcus occupy an intermediate position, and those caused by streptococcus viridans are the least rapidly fatal.

The material upon which this study is based consists of sixty-four fatal cases of subacute streptococcus endocarditis; twenty-six in which diagnosis was made from the clinical course of the disease and positive blood culture, and thirty-eight which came to necropsy. The series does not include a number of cases in which clinical diag-

†At least two cases have been reported in which Brucella abortus was isolated from the lesions at necropsy. These raise the question as to whether those described as being due to infection with Bacillus influenza may not have been caused by Brucella abortus.

nosis was not confirmed nor seventeen necropsy cases which fall under Group C of our classification. All of the cases occurred in the Stanford medical services at Lane Hospital and the San Francisco Hospital, or were private patients who were seen in consultation by the author or for whom the bacteriological examinations were made by him. With two or three exceptions, all blood cultures were taken by him or by his assistants, and all necropsies were performed by Doctor Ophüls or his associates.

All of the positive blood cultures showed growth of anhemolytic streptococci, seventeen of which were classified at the time as viridans. It is probable that some of the others may have shown green pigment, but they were studied before the viridans nomenclature was introduced into the laboratory.

INCIDENCE

The incidence of this disease is probably greater than is usually believed. Libman [4b] states that 0.3 per cent of persons with chronic valvular disease die of subacute bacterial endocarditis, and Horder [5] found that one in every one hundred and seventy-three patients in his ward service suffered from this disease. There is some question as to whether the disease is becoming more common, but the question cannot be answered from this small series. Cotton [6] recorded that 8 per cent of invalided soldiers with gross valvular lesions had subacute bacterial endocarditis, and Morawitz [7] stated that it had been observed more frequently in Germany since the war. The most recent data on this subject are those of Wauchope,[3] who found that in London hospitals the disease became much more common immediately after the war although the increase was due to the incidence in ex-soldiers, whereas that among civilian males and females remained unchanged.

Forty-eight males and sixteen females, respectively 75 and 25 per cent, made up our series. This corresponds fairly closely to Blumer's series [8] of three hundred and twenty-eight collected cases in which 60 per cent were males and 40 per cent were females. There is nothing in our records to suggest racial susceptibility, but in Thayer's series at Johns Hopkins Hospital [9] there is evidence that negroes are especially susceptible to gonococcus endocarditis which may simulate the viridans type in some degree.

Forty-four of our patients, 71 per cent of those in whom the age is recorded, were between twenty and forty-nine years of age, five were between ten and nineteen, and six were over sixty. Taking for comparison the incidence between ten and forty-nine, our series shows 79.3 per cent as compared with 86 per cent in Blumer's series.[8]

Among the predisposing causes, chronic valvular disease of the heart appears to play an important part although the reason for this is not clear. It is suggested that in healed endocarditis the vascular arrangement is such as will favor the lodging of small emboli and thus determine the focus of new infection. Eighteen patients in our series gave a history of one or more attacks of rheumatic fever, and one of chorea. Seventeen gave history which indicated old, mostly long-standing, heart lesions and one, the youngest in the group, had a congenital heart lesion.

ONSET

The majority of records contain no reliable data as to the immediate source of infection, but in our series the beginning of the terminal illness occurred in three patients immediately after the extraction of abscessed teeth, in one during convalescence from an acute infection which was diagnosed pneumonia, in one after curettage in a woman who had induced an abortion two years before and had had persistent vaginal discharge since then, and in one following an infected finger. At least ten patients stated that they had caught a severe cold or had "influenza" several weeks or months before and had not been able to regain their strength. One very interesting case in this last group was a young woman who for three years had shown typical signs and symptoms of Addison's disease, which, incidentally, was proved at necropsy to be associated with extensive tuberculous lesions in the adrenals. About eight months before admission to hospital she had an attack of "influenza" after which she was unable to work, and lost ground rapidly. One patient who was pregnant had recurring attacks of bronchitis, tonsillitis and arthritis during pregnancy and died before reaching term.

A number of cases were found at necropsy when clinical diagnosis had not been made. The most interesting of these was the case of a woman who had had diabetes for several years and who entered the hospital in coma. She responded fairly well to insulin but collapsed suddenly and died when insulin was discontinued.

The lesions of the patient who had Addison's disease conformed to those of Libman's [4a] terminal cases in that there were no signs of embolism and no bacteria were found in smears from the lesions on the heart valves, but in the other case, the patient with diabetes, smears from the heart-valve lesions contained streptococci and there were many recent infarctions in the kidneys and spleen.

PATHOLOGY

The pathology of subacute bacterial endocarditis must be considered from three points of view:

1. The changes in the heart.
2. The changes due to long-standing infection.
3. The changes due to embolism.

The heart may be of normal size, or may be large, particularly in those cases in which there has been aortic insufficiency of long standing. There may or may not be hydropericardium, but in our series the amount of fluid was never very great. Usually the pericardium is smooth, and often studded with petechiae, but in five cases there was fibrinous pericarditis, four general and one localized, all of them associated with aortic valve lesions. No perforations through the heart wall were demonstrated, but it seems quite probable that the pericardial process was secondary by extension from the lesions at the base of the heart.

The heart muscle is usually opaque and may have necrotic areas if there has been embolism

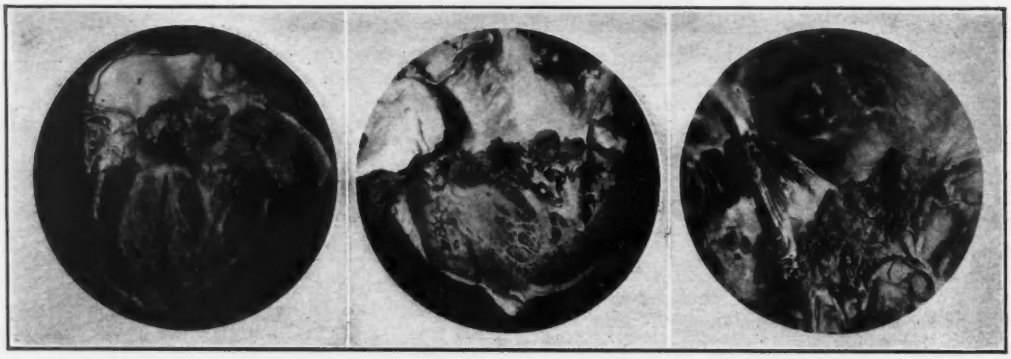

Fig. 1 (Case 29—57).—Note the deep lesions at the aortic orifice and the fibrinous pericarditis.

Fig. 2 (Case 18—166).—Note the involvement of the mitral valve with extension to the chordae tendineae.

Fig. 3 (Case 16—205).—Note the lesions on the proximal and distal mitral cusps, the chordae tendineae, the aortic cusps, and the wall of the ventricle.

into the coronary arteries, but ordinarily it is fairly firm and does not show extensive signs of tissue degeneration.

The endocardium, however, shows very extensive and very characteristic lesions. They are involvement of the valves, of the chordae tendineae and sometimes of the tips of the papillary muscles, and of the mural endocardium. The lesions in the valves tend to be proliferative rather than destructive and the typical vegetation is a firm, fibrinous mass, sometimes small and sessile, at other times large and polypoid or even massive. There may be extensive destruction of the flaps of the valves and there may be aneurysms or perforation of the valves; in fact, the common coincidence of aortic and mitral valve lesions is often due to perforation of the large flap of the mitral valve and extension of the process on the surface opposite to that bearing the initial lesion. The vegetations may be pale or pink in color and there is always an attempt at healing at the base. The extent of healing varies greatly, and Libman[4c] has reported cases in which it has been complete. In our series there have been the usual variations in degree, often with calcification at the bases of the vegetations, but in one case there was evidence of an old extensive process of the mitral valve, involving the chordae tendineae and the tips of the papillary muscles, which was entirely healed; the terminal acute illness was associated with a large, recent mural involvement in the right auricle.

Libman[4c] emphasizes the fact that the vegetations of the subacute type are usually larger than in rheumatic fever, and that there is absence of the typical Aschoff bodies in the myocardium. There are, however, so-called Bracht-Waechter bodies in subacute cases, round cell interstitial lesions which occur in the myocardium. There is usually no evidence of pus formation in lesions caused by emboli in the coronary arteries. The characteristic incidence of the disease in adult life would indicate that in the majority of cases the lesions are of the valves of the left side of the heart, and this is in fact the case. A survey of our series shows approximately the same distribution as was found by Blumer[8] in his survey of the literature, and is in sharp variance with the distribution in rheumatic endocarditis where there is a high incidence of tricuspid involvement.

Extension to the chordae tendineae occurred in nine of the twenty-nine cases in which the mitral valves were involved, and there was involvement of the mural endocardium in nine. In one instance the only involvement of the right side of the heart was an extensive mural vegetation which was secondary to, and directly continuous with a lesion in the left ventricle which had perforated the interventricular septum.

The manifestations of general infection are varied, the most important being enlargement of the spleen, secondary anemia and cloudy swelling of the parenchymatous organs. There is a tendency to diffuse hemorrhages in the serous surfaces and in the skin in addition to the presence of petechiae which are embolic, and one of our patients showed pachymeningitis interna hemor-

Fig. 4 (Case 28—55).—Note the lesions of the aortic cusps and the extension to the wall of the ventricle.

Fig. 4 (Specimen 52—24).—Note the healed lesion on the mitral valve and the active process on the wall of the auricle.

TABLE 2.—*Distribution of the Active Processes in the Heart in Subacute Bacterial Endocarditis*

Valves Affected	Dickson and Cooke 38 Necropsies		Blumer 150 Necropsies*	
Mitral valve only	13	92.1%	58	89.0%
Aortic valve only	6		16	
Mitral and aortic valves	16		56	
Pulmonary valve only	–		4	
Tricuspid valve only	1		3	
Mitral and tricuspid valves	–		1	
Aortic and tricuspid valves	–		3	
Aortic and pulmonic valves	–		1	
Mitral, aortic and tricuspid valves	1		4	
Chordae tendineae affected	9			
Walls of chambers affected:				
Left auricle	4			
Right auricle	3			
Left ventricle	4			
Right ventricle	2			

* Collected from the literature.

rhagica for which no local cause could be determined. The spleen was enlarged in twenty-five of our necropsy series.

As already stated, there are often showers of petechiae in the skin and conjunctival membrane which are caused by minute emboli, and similar minute emboli may lodge in the glomerular tufts in the kidneys to cause the characteristic glomerular nephritis of Löhlein[10] and Baehr.[11] Among thirty-nine clinical records which were available, nineteen recorded petechiae and in our necropsy series glomerular nephritis was recorded nineteen times. The distribution of the glomerular lesions is scattered; Gaskell[12] has described the appearance of the kidney as "flea-bitten"; and the total kidney function may not be much impaired. However, there is usually also a parenchymatous degeneration of the kidney epithelium, and if one carefully examines the urine one will find albumin, casts and red blood cells in most cases.

Embolism due to larger fragments than produce petechiae and glomerular lesions are very common, and occurred in twenty-seven cases of our necropsy series. The greatest number lodged in the vessels of the spleen and kidneys, respectively fifteen and sixteen times, but seven lodged in the vessels of the lungs, five in the coronary arteries, four in the vessels of the brain, three in the leg, two in the mesenteric artery, and one each in the iliac artery and an artery of the tip of the nose. In two instances embolism was the first clinical indication of serious illness, hemiplegia being caused in one and obstruction of the femoral artery in the other. In only two instances were the metastatic lesions of a purulent nature.

SIGNS AND SYMPTOMS

Blumer[8] has briefly stated the general characteristics of the disease as follows: "The clinical manifestations of subacute bacterial endocarditis naturally fall into two periods, an early period when the symptoms and signs are those of low-grade infection and a late period when the manifestations of embolism hold the prominent place. The duration of the first period is usually impossible to determine because the onset of the disease is so insidious that the exact time at which infection occurred cannot be fixed. The onset of the stage of embolism is more readily appreciated as the emboli, even when they involve the internal organs, give rise to recognizable clinical phenomena."

A typical onset of the insidious type is illustrated by the history of a butcher, age thirty-five, who believed he was perfectly well until four months before admission to hospital, when he began to be short of breath on exertion and tired easily. Within two or three weeks he was forced to cease work and soon was so weak that he remained in bed. He had no pain, did not know he had fever and was very comfortable so long as he remained in bed. He died about four months after first noticing weakness.

Eighteen of our patients complained of shortness of breath, ten of weakness, five of chills and fever, two of night sweats, four of gastrointestinal disturbances, including loss of appetite, dyspepsia and diarrhea, two of precordial pain, four of palpitation, four of swelling of the feet, and one of arthritis. One patient had passed through normal pregnancy and was apparently convalescing satisfactorily when she suddenly developed hemiplegia three weeks after delivery. Subsequent necropsy showed that this was due to embolism.

There is no regular sequence in the development of signs and symptoms, in fact, the course as well as the mode of onset varies so greatly that it is difficult to describe a typical case. The signs and symptoms may be very obscure at first, low-grade fever, pulse somewhat increased in rate, little if any impairment of nutrition, normal blood or slight anemia, weakness and early fatigue. If the physician has known the patient to have had valvular disease of the heart, or if there is history of valvular disease, his attention is not particularly aroused by the signs of valvular insufficiency unless the murmurs differ from those which he had previously heard. Suspicion is aroused only when the fever persists, when there are recurring febrile periods with short intermissions, when there is progressive anemia, the spleen becomes palpable or petechiae appear.

In addition to the early symptoms which have been mentioned there may be chilly sensations, painful erythematous nodules in the skin, pains in the muscles or joints without local reaction, backache and smoky urine. One of our patients was not alarmed about his condition until there was sufficient blood in the urine to be macroscopically visible.

A number of patients, however, have a stormy onset, with chills and fever, extreme prostration and headache. Several cases have been diagnosed as malaria, and in one instance, a professional man who had suffered from malaria, it was at least two months before he would admit that his symptoms were different from those he had experienced during his attacks of malaria.

Symptoms referable to the nervous system are common. In the early stages there is often restlessness and apprehension which, in the absence of positive objective signs, may lead to a diagnosis of hysteria. Headache is very common, sometimes occurring early, and sometimes very

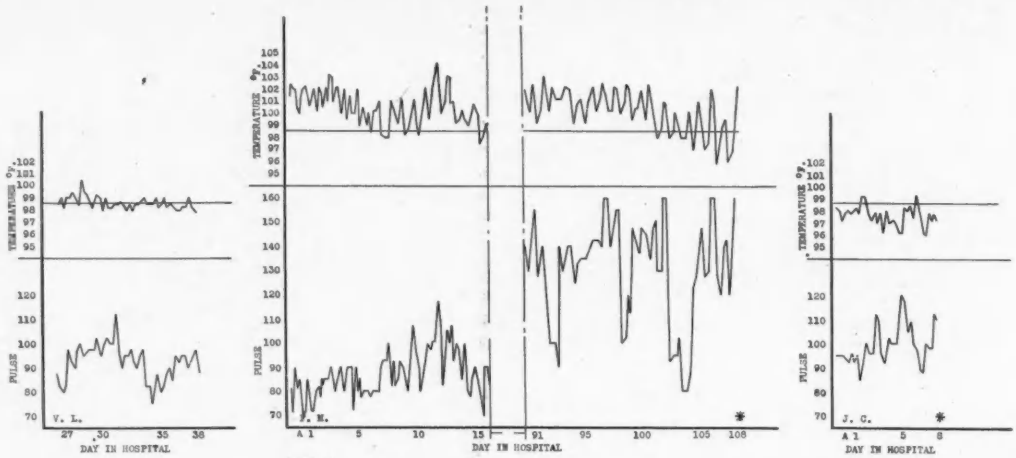

CHART I. CHART II. CHART III.

severe. Vertigo was an outstanding early feature in two of our cases. Many of the patients sleep poorly and become depressed, but it is surprising how many of the victims remain cheerful and confident of recovery, their only distress being that they are so weak they cannot be up and moving about. Rarely there is delirium in the terminal stages and there may be coma before death. Convulsive seizures, coma and hemiplegia may be caused by emboli and sometimes there is aphasia from embolism without signs of paralysis.

Acute meningitis is rarely seen as a result of cerebral embolism, a very striking difference from what occurs when the infectious agent belongs to the third group of our classification.

Nutrition suffers little at first and sometimes remains good throughout the disease; usually, however, there is progressive loss of weight but not to the stage of emaciation. The appearance of the skin is fairly characteristic, especially in the later stages. There is a peculiar brownish yellow discoloration, which is not jaundice, but which Libman [4d] has described as a café-au-lait tint. It differs from the lemon-yellow color of pernicious anemia, but is difficult to describe. The sclerae become progressively more pearly-white as the anemia progresses, and when petechiae appear they are especially to be found in the conjunctiva, the pharyngeal mucous membrane and the skin of the axilla, arms and chest, although they may be widely distributed. Occasionally there is true jaundice.

Examination of the chest gives little help at first unless there is a change in the character of heart murmurs which have been known to exist. Libman [4d] has described tenderness on pressure over the upper part of the sternum, but this was not at all constant in a number of our cases. There is usually some bronchitis and patients often complain of cough, but when signs of pulmonary involvement are present, they are apt to be confusing rather than helpful in diagnosis.

There is nothing characteristic in the abdomen until the spleen becomes palpable, which may be early or comparatively late in the disease. Sometimes it is enlarged when the patient first comes under observation, but at other times it is not felt for several weeks. In one patient who first became ill in November, and who was continuously under observation from early in January, the spleen was not felt until the middle of March, although his temperature was high during the whole time. The liver is usually enlarged but is not tender. In the rare instances when the condition develops upon a heart which is already verging on decompensation there may be early signs of liver engorgement.

Examination of the extremities gives little that is diagnostic unless petechial hemorrhages are present. There may be tenderness and swelling in the joints, occurring early or later, but this has been an outstanding feature in only two of our cases. The arthritis may persist or may be transient, in one of our cases it was recurrent. Blumer [8] states that sometimes streptococcus viridans may be recovered from the synovial fluid. The painful erythematous nodes of Osler [13] may be found along the shins or other long bones, but have not been at all frequent in our series.

There is no record of eye changes in our series, but in very few cases were they specifically searched for. Blumer [8] states that retinal changes are recorded in about 10 per cent of cases in which routine examination was made, and Falconer [14] found five in a series of fifteen cases in which he made special examination. Embolism may occur and there may be retinal hemorrhages. Libman [4a] states that optic neuritis may occur, sometimes resulting in optic atrophy, and he believes that it is much more frequent than has been realized.

There is no characteristic febrile reaction, the majority of cases running a low fever at first, although some have a widely swinging, septic type of fever from the beginning. Lenharz [15] believed that when the patients have septic temperature and chills the infecting organism is not streptococcus viridans, but that has not been our experience. Blumer [8] found that in the majority of cases the temperature swing does not exceed four degrees, but sometimes it may be greater. His survey also shows that among 249 patients whose records contain details, 116 had fever only, 70

fever and chills, 16 fever and sweats, and 34 fever, chills and sweats.

Some patients are afebrile, at least during the time they are under observation, and Libman [4a] points out that they may be in a bacteria-free stage and that there may be recurrence of the fever. In one of our patients there was an initial febrile period of three weeks, followed by a period of a month during which there was normal temperature, only to be followed by continuous fever for more than three months which lasted until his death. It may be said in passing that despite repeated examinations, blood culture was always negative in this case until six weeks after the onset of the second febrile period.

Still other patients, however, remain afebrile until death, as is shown in Chart 3. Unfortunately there is no record of blood culture in this case, but careful examination of smears from the valve lesions made at necropsy failed to show any bacteria.

The pulse rate in subacute bacterial endocarditis is more rapid than normal, and in patients with low temperature tends to be greater than the amount of temperature would explain. In fact, in one instance, had we paid sufficient attention to the discrepancy between temperature and pulse, it is doubtful whether we would have so readily accepted a clinical diagnosis of cerebrospinal syphilis. A few patients show irregularities or develop them during the course of the disease, but this is not the rule. The majority of patients continue to have regular pulse although the rate tends to become more rapid as the disease progresses.

A characteristic feature of the disease is progressive anemia of the secondary type which is rarely extreme. A survey of the red blood count and hemoglobin estimation of twenty-three patients taken during the last month of life is shown in Table 3. The figures compare fairly well with those of Blumer,[8] who found approximately one-third of recorded counts between three and four million with the remainder about equally divided above and below these numbers. It is surprising, however, that, despite the infection, the red blood count sometimes remains very high, above five million, and in one of our cases the cell count increased from 4,072,000 to 6,408,000 during the last two months of life, the hemoglobin increasing from 72 to 85 per cent during the same time.

There is very wide variation in the leukocyte counts. Not infrequently one of the confusing features is a leukopenia, sometimes as low as 3000 cells, which, taken with low-grade fever, strongly suggests typhoid fever. At other times the leukocyte count is very high; in our series the maximum observed was 60,000. The majority of cases, however, show leukocyte counts of from eight to fifteen thousand, and, as a rule, the polymorphonuclear increase is not relatively very great. The results of one hundred and seven counts in fifty patients is shown in Table 3.

TABLE 3.—*Summary of Blood Counts in Subacute Bacterial Endocarditis*

Red Blood Corpuscle Count on 23 Patients during Last Month of Illness		Hemoglobin		107 Leukocyte Counts on 50 Patients	
Over 6 million	1	80-90 %	2	50,000–60,000	2
5 to 6 million	–	70-80 %	5	40,000–50,000	2
4 to 5 million	6	60-70 %	3	30,000–40,000	3
3 to 4 million	10	50-60 %	4	20,000–30,000	8
2 to 3 million	5	40-50 %	3	15,000–20,000	16
1 to 2 million	–	30-40 %	4	10,000–15,000	27
Under 1 million	1	20-30 %	–	6,000–10,000	37
		10-20 %	1	5,000– 6,000	3
				4,000– 5,000	6
				3,000– 4,000	3
6,408,000		Highest Count		60,000	
900,000		Lowest Count		3,300	

The urine may be normal at first, but soon there is albumin and the sediment contains casts and red blood cells. The amount of blood is rarely sufficient to cause smokiness or a red discoloration of the urine, but it is almost always found at some time during the course of the disease. In fact, the appearance of red blood cells in the urine in febrile cases of uncertain etiology is one of the indications which should lead one to think of subacute bacterial endocarditis.

Sometimes bacteria may be isolated from the urine, and this may also aid in diagnosis. In an earlier report [16] one case was mentioned in which positive blood culture was not obtained, but streptococci of the same type as were subsequently found at necropsy were isolated from the urine during life.

Stanford Hospital.

(To be continued)

FIBROSIS OF THE MYOCARDIUM*

By RICHARD D. EVANS, M. D.
AND
FRANKLIN R. NUZUM, M. D.
Santa Barbara

DISCUSSION *by W. T. Cummins, M. D., San Francisco; G. Y. Rusk, M. D., San Francisco; Gertrude Moore, M. D., Oakland.*

CHRONIC myocarditis was one of the diagnoses frequently made in the Cottage Hospital until recent years. This is true of most hospitals, and Cabot states that in the files of the Massachusetts General Hospital it almost leads in frequency.[1] The reason for this lies in the fact that clinical observations have not been carefully correlated with postmortem investigation into the state of the cardiac muscle. Any decompensation or arrhythmia has been considered by the clinician as an adequate basis for this diagnosis. Fahr in 1923 reported the findings in examination of hypertension hearts, as hypertrophy and dilatation of the left ventricle, diffuse connective tissue proliferation between the bundles as well as into them, and much less frequently cicatricial patches.[2] These changes occurred in the chambers called upon to do the increased work and apparently were not due to inflammatory processes. The condition of the coronary arteries was not mentioned. He believed no good grounds existed for assuming that chronic infections are the most productive factor in chronic myocarditis, as no one has ever experimentally produced these changes by inoculation. Following the suggestion of Bell he found that three-fourths of so-called chronic myo-

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carditis is due to a primary hypertension. The hypertrophied heart performs excessive work and is less efficient because of the hypertension. The factor of fatigue is very important in the failure of these hearts.

CAUSATIVE FACTORS AND RESULTS

In a report published this year [3] he states that the diagnosis of chronic myocarditis is an unhappy one, and quotes Clawson as demonstrating that fibrosis of the myocardium in hypertension heart is found only when coronary sclerosis is present. Bell is quoted as of the belief that 10 per cent of all hypertension hearts have no coronary sclerosis; 55 per cent a moderate degree, and the remainder a moderately severe to a marked involvement of the coronary arteries.

Cabot, after an extensive analysis of necropsy material, finds that the data support the belief that all cardiac enlargement is a work hypertrophy, due to causes that throw continuous extra work on the heart for months or years.[1] These hearts are prone to fail sooner or later. Myocarditis has no part in this failure, as most of these hearts have none. He states that the use of the term "chronic myocarditis," when there is clinical evidence merely of an enlarged and weakened heart, is never justified, and that this diagnosis ought never to be reported as the cause of death. In his opinion microscopic foci of scar tissue do not contribute to functional weakness; and even gross patches of fibrous tissue may be present with no chronic passive congestion demonstrable at necropsy.

In the majority of cases the appearance of scars in the myocardium is preceded by changes in the coronary arteries. These arteries furnish most of the blood supply to the heart and vary greatly in anastomoses in normal and diseased hearts. Oberhelman and LeCount analyzed nine hearts without arterial disease and found that the coronary arteries were practically end arteries.[4] In five other normal hearts they found a considerable amount of anastomoses. In two other groups of hearts both with and without myocardial change, and having narrowed and occluded arteries, abundant anastomoses were present.

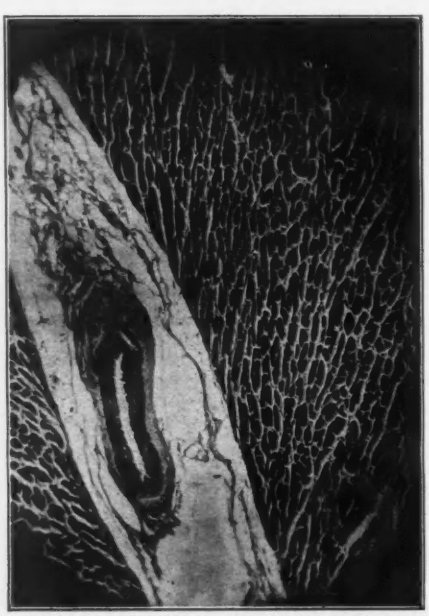

Plate 1 (x 100).—Illustrating hypertrophic heart muscle fibers and sclerosis of a small branch of a coronary artery.

Plate 2 (x 150).—Illustrating scar tissue interruption of the myocardial fibers in a localized region of fibrosis.

The changes in the coronary arteries, listed by Benson [5] as leading to slow obstruction, include: narrowing of the ostia, most commonly from syphilitic aortitis, or from sclerosis; narrowing of the lumina from arteriosclerosis, luetic arteritis, rheumatic arteritis and endarteritis, and rarely from external pressure by a dissecting coronary aneurysm or myocardial scars. Sudden obstruction may be due to thrombosis or embolism and rarely from acute arteritis and endarteritis. Most commonly the process is a mixed type of chronic narrowing complicated by thrombosis.

In the absence of coronary artery disease myocardial scarring may result from rheumatic disease or syphilis of the heart muscle, as has been demonstrated by Warthin. Less commonly toxic and infectious lesions of the myocardium are responsible for foci of sclerosis.

DIAGNOSIS DURING LIFE

Cabot takes the stand that the diagnosis of fibrous myocarditis is impossible during life.[1] In another place he modifies this view somewhat with the statement that it may be suspected in the infarctive group and in certain cases of complete heart block. This attitude of course represents the extreme opposite to the prevalent practice of labeling every failing heart as chronic myocarditis. White has found the electrocardiogram to be very helpful in that bundle branch block, lesser degrees

Plate 3 (x 100).—Illustrating the reactive inflammatory exudate in an infarct which ruptured.

of intraventricular block, inverted T-waves in leads 1 and 11, low voltage in all leads, or moderate or high-grade auriculoventricular block usually mean coronary disease.[6] Even after coronary thrombosis the electrocardiogram may be normal or almost so, and a normal tracing does not rule out some degree of myocardial fibrosis, though it tends to rule out an extensive degree, according to his observations. Masters and Pardee come to the same conclusions that an abnormal electrocardiogram is indicative of heart disease, while a normal record usually means a normal heart.[7]

PRESENT STUDY MATERIAL

In the present investigation forty-three specimens of hearts were examined, mostly museum material. The coronary arteries in each instance were examined throughout their lengths, and sections were cut from the myocardium of the septum and from the wall of each auricle and ventricle. These sections were cut, stained with hematoxylin and eosin, and were examined microscopically for the presence of scar tissue or other changes. In a few instances where the clinical records were obtainable, pertinent data from them are appended.

COMMENT ON TABLES

The material is divided into four groups. Table 1 includes ten hearts from patients known to have had hypertension. In most the systolic blood pressure had been 200 or above, for some time. The average heart weight was 457 grams. In six instances no scar tissue was seen in the heart muscle, and in these the coronary arteries were slightly to moderately sclerosed, with patent lumina. In the other four there was marked sclerosis of the coronary arteries, with considerable narrowing of the lumina, especially of the anterior descending branch of the left. In these hearts small patches of fibrous tissue were found in the myocardium of the left ventricle and septum; the patches were recognizable grossly as gray regions in two instances, but were not of sufficient extent to have apparently materially interfered with the heart's action. Microscopically there were: interruption of the muscle fibers and replacement by dense rather acellular connective tissue. Marked sclero-

TABLE 1.—*Hypertensive*

Heart	BLOOD PRESSURE Systolic	Diastolic	Fresh Weight Grams	Condition of Coronary Arteries	Microscopic Appearance of the Myocardium
A	188	166	234	Normal.	No scarring.
B	250	180	656	Moderate sclerosis. Patent lumina.	Hypertrophic fibers, especially of left ventricle. No scarring.
C	220		353	Moderate sclerosis. Patent lumina.	Moderate hypertrophy of the fibers, slight scarring of left ventricle and septum.
D	150	80	412	Normal.	Hypertrophic fibers. No scarring.
E	150	70	420	Marked thickening with lime and narrowing of the anterior descending branch of the left.	Hypertrophic fibers, patchy fibrosis of the left ventricle and septum.
F	200	100	595	Marked sclerosis, especially of the anterior descending branch of the left.	Hypertrophic fibers, moderate scarring.
G	202	120	355	Moderate sclerosis, patent lumina.	Hypertrophic fibers, no scarring.
H	200	80	485	Moderate sclerosis, patent lumina.	Hypertrophic fibers, no scarring.
I	230	120	700	Slight sclerosis, patent lumina.	Marked hypertrophy of the fibers, no scarring.
J	210	120	350	Slight sclerosis, patent lumina.	Moderate hypertrophy of the fibers, no scarring.

TABLE 2.—*Gross Infarction*

Heart	Weight after Preservation Grams	Condition of Coronary Arteries	Gross Appearance	Microscopic Appearance
3	240	Thrombosis of the anterior descending branch of the left.	Rupture of left ventricle.	Extensive regions of necrosis infiltrated with erythrocytes; thickened walls of arterioles.
2	325	Thrombosis of the anterior descending branch of the left.	Rupture of left ventricle.	Region near the apex has lost staining properties, and is infiltrated by erythrocytes.
1	432	Thrombosis of the posterior descending branch of the left circumflex.	Rupture of the posterior wall of the left ventricle.	Region of necrosis at the edge of the rupture.
M	350	Thrombosis of the anterior descending branch of the left.	Partial rupture of the left ventricle with a subepicardial clot.	Extensive necrotic region infiltrated with erythrocytes and with polymorphonuclear leukocytes at the edge.
8	365	Thrombosis of the descending branch of the left circumflex.	Aneurysmal dilatation of the posterior wall of left ventricle near apex.	Marked scarring near the apex.
4	427	Thrombosis of the anterior descending branch of the left.	Aneurysmal dilatation of the apex of the left ventricle.	Extensive scarring of the septum at the edge of the aneurysm.
6	135	Marked sclerosis of the posterior descending branch of the right.	Thinning of the wall of the right ventricle.	Apparent disappearance of many fibers of the right ventricle; diffuse connective tissue hyperplasia of septum.
5	662	Marked sclerosis of the coronary arteries with obliteration of lumen of the anterior descending branch of the left.	Aneurysmal dilatation of the wall of the left ventricle.	Extensive scarring of the septum and wall of left ventricle.
N	393	Moderate sclerosis with obliteration of the anterior descending branch of the left.	Aneurysmal dilatation of the wall of the left ventricle.	Localized fibrosis of the wall of the left ventricle.

sis of the smaller branches of the coronary arteries was observed in these regions.

For the remaining hearts there are no clinical data. Under Table 2 are included nine instances of gross infarction. Rupture of the left ventricle had occurred in four, while in the rest there were aneurysmal dilatation of the left ventricle in three, and of the right ventricle in one. In all of these there was marked narrowing of the lumen of the artery supplying the infarcted region, or complete obliteration. There was marked sclerosis of the coronary arteries, especially of the anterior descending branch of the left. Thrombosis combined with the sclerosis to produce the complete occlusion. The microscopic picture varies with the duration of life following the infarction, and depends upon whether or not the obstruction of the blood supply develops gradually or suddenly. In the latter instance there is no time for fibrosis to develop, and rupture is likely to occur. Where the arterial narrowing has developed slowly, as from thickening of the vessel wall, the muscle fibers atrophy, and the existing connective tissue contracts. If the necrosis is more extensive the region is converted into a homogeneous pink-staining mass, in which nuclei cannot be identified. Later this is invaded by a reactive inflammatory exudate, the detritus is phagocyted, and a vascular connective tissue forms which later contracts as a scar.

Table 3 lists five hearts, four with valvular lesions and one hypertrophied as a result of adhesive pericarditis, no scarring of the muscle of the wall of the chamber called upon to do the increased work was found; in all the coronary arteries had patent lumina and fairly smooth linings.

In Table 4 are included nineteen hearts placed in the museum for various reasons, mostly hyper-

TABLE 3.—*Valvular Lesions*

Heart	Weight after Preservation Grams	Valvular Lesion	Condition of Coronary Arteries	Microscopic Appearance of Myocardium
10	419	Mitral and aortic thrombo-ulcerative endocarditis.	Normal.	Unchanged, right ventricular wall 7 mm. thick.
66	384	Stenosis of pulmonary artery by enlarged tuberculous glands.	Normal.	Unchanged, right ventricular wall 8 mm. thick.
12	345	Aortic, mitral, and tricuspid stenosis.	Normal.	No scarring.
43	515	Mitral stenosis.	Normal.	Right ventricular wall 10 mm. thick; hypertrophic fibers, but no scarring.
13	510	Adhesive pericarditis, with incompetent aortic valve.	Normal.	No scarring.

TABLE 4.—*Miscellaneous*

Heart	Weight after preservation Grams	Condition of Coronary Arteries	Miscroscopic Appearance
T 3	101	Moderate sclerosis.	No scarring.
U 22	433	Slight sclerosis.	No scarring.
55	408	Slight sclerosis.	Slight interfasicular increase of connective tissue.
46	449	Normal.	No scarring.
54	317	Normal.	No scarring.
1648	420	Normal.	No scarring.
32	267	Normal.	No scarring.
28	227	Moderate sclerosis, patent lumina.	No scarring.
64	328	Moderate sclerosis, patent lumina.	No scarring.
47	342	Moderate sclerosis, patent lumina.	No scarring.
50	459	Slight sclerosis.	No scarring.
29	467	Slight sclerosis.	No scarring.
69	245	Moderate sclerosis, patent lumina.	No scarring.
57	381	Moderate sclerosis, patent lumina.	No scarring.
27	337	Moderate sclerosis, patent lumina.	Slight scar tissue formation of the left ventricle.
31	225	Slight sclerosis.	No scarring.
30	272	Marked sclerosis of anterior descending branch of the left.	Extensive fibrosis of the septum.
39	280	Slight sclerosis.	No scarring.
17	269	Normal.	Normal.

trophied as a result of hypertension. We assume this to be so, since no valvular lesion or adhesive pericarditis is present to explain their increased weights. In these a slight scarring of the myocardium was present in four. In two of these the sclerosis of the coronary arteries was slight, in one moderate, and in one, marked, of the anterior descending branch of the left. In the remaining fifteen hearts the involvement of the coronary arteries varied from little or none to a moderate thickening. Likewise in these the only change present was a hypertrophy of the muscle fibers, no scarring being seen. In most instances, therefore, the regions of fibrosis are explained by a decrease or total lack of blood supply from changes of the coronary arteries. In a few instances the arterial changes do not seem sufficient, and a preceding syphilitic or rheumatic inflammation may well have been responsible for the muscle damage, with the resulting scarring.

CONCLUSIONS

1. Fibrosis of the myocardium is not the result of work hypertrophy, but in the majority of instances results from decreased blood supply to the affected region from disease of the coronary arteries.

2. Less often scars of the myocardium may result from a preceding syphilitic or rheumatic myocarditis.

3. A decompensated heart is not justification for the diagnosis of fibrosis of the myocardium. We believe that in the presence of electrocardiographic changes, and with a characteristic history of anginal pains, the presence of scar tissue may be predicted, though in the absence of gross infarction these regions of fibrosis do not seem important.

Cottage Hospital.

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DISCUSSION

W. T. CUMMINS, M. D. (Southern Pacific Hospital, San Francisco).—Perhaps there is no diagnosis that is more frequently made during life and later entered upon the death certificate than "chronic myocarditis." This diagnosis by many clinicians appears to be a comprehensive one covering a general cardiac pathology which induces any one of the symptoms of decompensation, arrhythmia, cyanosis, dyspnea, etc. It is patent that there have not been sufficient studies based upon the correlation of clinical and pathological data. We know that chronic interstitial myocarditis or fibrosis of the myocardium may exist either as a diffuse fibrosis, coincidental with a similar process in the other viscera and attendant upon chronic toxic factors, or as a localized fibrosis, which is chiefly induced by coronary pathology. As a matter of fact the pathologist does not see a diffuse myocardial fibrosis that is commensurate in frequency with the fibrosis seen in the spleen or kidneys. The majority of our

cardiorenal cases, with and without the hypertensive state, do not show at autopsy diffuse myocardial fibrosis. Some of these cases develop coronary sclerosis, which eventuates in more or less stenosis and sometimes thrombosis. Infarction may take place and, if the patient survives, replacement hyperplasia, or localized fibrosis, develops. The diffuse form of chronic myocarditis does not yield symptoms whereby it may be clinically diagnosed. The localized form may be suspected in cases which clinically reveal coronary disease.

The authors have concisely and interestingly presented a very pertinent topic and the writer agrees with their expressed sentiment. The writer thinks that "chronic myocarditis" should be eliminated from our clinical nomenclature, and that the term "chronic interstitial myocarditis" should be only a pathological one. If the clinician believes that complete obstruction has occurred in a coronary artery, the assumption is that infarction has occurred. In some cases without autopsy "cardiac dilatation" may be the assumed terminal pathology, and this oftentimes is the end of a process comprising work hypertrophy and subsequent muscle fatigue or degenerative changes. It is the writer's opinion that if we performed more autopsies we would find a greater incidence of coronary disease to explain myocardial pathology and, therefore, relieve somewhat the plethora of "chronic myocarditis" diagnoses.

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G. Y. Rusk, M.D. (University of California Hospital, San Francisco).—The topics discussed in the paper appear to the reviewer most timely. The use of the term "chronic myocarditis" possibly has arisen from a tendency to give anatomical explanations to purely functional disorders. It has been our experience also that the term "chronic myocarditis" has formerly been too extensively used to cover merely functional inadequacy of hypertrophy and secondary dilatation of the heart. So often has no fibrosis been demonstrable in these cases that we believe there has already been a distinct tendency on the part of the clinicians to be a little wary of this diagnosis. Where there seems to be some definite evidence for a genuine myocardial disease along the lines indicated in the paper it seems to the reviewer wise to use the term "myocardial fibrosis" which term is consistent with the not infrequent findings at autopsy. The term "myocarditis" should be restricted to those cases where the anatomical findings give evidence of a preëxisting inflammatory process. It must be admitted, however, that possibly some of the myocardial infarctions occurring principally in earlier life due to infection of the myocardium brought by way of the coronary vessels may lead to a scarring which years after may have lost all of its microscopic evidences of inflammatory origin. This suggestion is based on the occasional finding of a heart without adequate arteriosclerosis and narrowing of lumina to explain the picture but with the presence of more or less extensive myocardial fibrosis, and even cardiac aneurysm.

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Gertrude Moore, M. D. (2404 Broadway, Oakland). Seldom do we find as large a group of ailments classified under one heading as is covered by the term "chronic myocarditis." The impossibility of differentiating in the living subject inflammatory processes from degenerative ones, and in turn either of them from the scars which result from such lesions, has led to this diagnosis in a large and varied group of pathologic changes in the heart. The only lesion which can with justification be called a myocarditis is one in which there is evidence of active inflammation existing at the time of the examination, with all or at least most of the tissue changes ordinarily found in this type of lesion. While fibrosis of the myocardium is in most instances the terminal stage of a myocarditis it is not in itself an inflammation and should not be so designated. The commonest etiologic factor in this condition is undoubtedly decreased coronary circulation with lack of nutrition, resulting in destruction of muscle tissue and finally scar formation. The subject is certainly one worthy of further consideration and study in order that we may correlate our clinical and postmortem findings.

MEDICAL EDUCATION *

By Langley Porter, M. D.
San Francisco

THE essentials of education necessary for the training of effective physicians is a subject which first necessitates agreement among ourselves as to the functions of medicine in the world. That these functions are preventing and alleviating human suffering, is a view that is hardly likely to be contested by those who are sure that medicine is an art, nor yet by those who clamor to have it ranked among the sciences. Probably both sides will agree that a large part of the time allotted the study of medicine should be devoted to seeking explanations of normal structure and function of the human body, and to a consideration of the deviations of structure and function that we call disease.

It is probable that there will be less unanimity of opinion about the need for studying environmental influences. However, from the moment of his birth until the undertaker, disguising himself as a mortician, finally gets him, man is under the constant attack of a thousand damaging forces, so that almost the major task which confronts medicine has to do with the relief of people who find themselves out of adaptation with their environment, and the doctor's job is to readjust the patient's functions to the world around him; or, when such restoration is impossible, to arrange matters so that the maladjustment can be borne with the least possible discomfort.

If it be true that these things are the chief concern of the art of medicine, it follows that human physiology, which busies itself with the activities of the body and of the body's behavior toward the things and happenings which surround it, must supply the foundation upon which the training of the future physician is based.

The important claims of pathology are rarely understated, but pathology, after all, is merely the codified sum of the information we have accumulated about the physiology and anatomy of morbid states. All branches of clinical medicine and surgery, together with the practice of preventive medicine and of therapeutics, do no more than provide us with means calculated to restore abnormally acting physiological functions to normal. Such a conception should provide the philosophic basis for the study of medicine.

IDEALS IN MEDICAL EDUCATION

Broadly speaking, there are two ideals of education dividing the medical schools of the present day.

The one is the ideal of the trade-school, which strives to turn out its students as skilled handicraftsmen, and as little more.

The other, which we are pleased to think of as professional, seeks to give a man a wider and more comprehensive view of his profession, and

* Read before the Fresno County Medical Association on November 6, 1928.

of his duties toward the community that he is to serve. The superior prestige of the professions, as well as the many privileges accorded to professional men and women, rest on a mutual—though perhaps unexpressed—understanding that the foremost duty of those who are of the professions is to supply unselfish service to others, even though often that service can be rendered only at the cost of great personal sacrifice.

Besides the idealism of community service there also is another quality that marks the professional type of medical school—that is, the effort never to lose sight of cultural values, the endeavor to train men so that each of them will be able to contribute something of leadership to the life of his time, not alone through his skill as a physician, but through his character as a man, his soundness as a citizen, and his philosophic point of view about life in general.

There is a third view of what a medical school should be: a view brilliantly supported by Winternitz of Yale, who is experimenting with the plan in New Haven. As it is yet but an experiment, and an academic one at that, time must be allowed to elapse before a valid judgment can be passed upon it. The guiding principle of this idea is the conception that clinical medicine is merely applied biology; and that the practice of the art can be taught as a graduate school subject, with a pedagogical technique that differs in no way from that in vogue in other graduate departments. In this scheme the hospital is considered one of the biological laboratories, and is put on a par with all others. The obvious error in the plan, as it is outlined at present, is that it loses sight of the essential differences that arise when the materials for our study are drawn from human beings, and when we derive them from impersonal materials in the library and laboratory.

Competent craftsmen in medicine we must have, but competence and craftsmanship are not enough, and it is a question whether these schools that try to give their students an opportunity to see, and do, and hear about every detail of the innumerable manipulations that medicine and surgery employ, succeed in their aim; whether the forest is not lost sight of in counting the trees. It is even a question if young people who come from schools which hold the professional ideal do not turn out to be quite as good craftsmen. Their training is such that they get a thorough understanding of the broad-based principles on which the art of medicine is founded; they are encouraged to be independent thinkers, to develop a critical curiosity, and they learn something of how science may be applied to the unraveling of any problem, whether that problem arise in the laboratory or at the bedside.

While there is no science of medicine, there is the method of science, and there also is a vast body of knowledge about the nature of man and about his environment. The bounden duty of those who practice the art of medicine is to see that no part of this knowledge is neglected, and to see especially that the method of science does not fall into disuse. The term "the method of science" indicates merely a process which uses a thorough observation of phenomena, careful recording of such observations, painstaking consideration of these records, and finally, practical application of such deductions as can logically be drawn from the study.

THE END OBJECTS OF A MEDICAL SCHOOL

After all, the whole problem turns on what manner of man a medical school should be trying to turn out. No matter how much the schools may differ as to the methods of doing it, with very few exceptions they would agree that at least eight-tenths of their graduates will become general practitioners. If these graduates are not prepared to meet the demands of practice, there will have been a dereliction of duty on the part of the school. Nothing can prepare them better than thorough training in this method of science.

The educational duties of the school do not cease when they have created the body of necessary practitioners: they are equally charged with keeping the ranks of the teachers filled with enthusiastic men who know not only the practice of medicine, but how best to present the subject to students; men who are possessed of the understanding heart, the heart that can grasp personalities, the strengths, the weaknesses of the pupils, and can offer the young men opportunities for study and for guidance along the lines suited to the peculiarities of each; opportunities and guidance most likely to round out information and develop character.

A third major educational task is a privilege of the schools: that is, the widening of the boundaries of knowledge about medicine, and about the biological sciences upon which the art of medicine is based, and about the reciprocal influences that medicine and society exert each on the other. And no small part of that task is the training of men, capable to investigate, and competent to carry on research. At the best, no medical school can hope to find more than one or two per cent of its students endowed with the qualities that are needed for the development of good investigators.

As a sort of by-product of these educational duties there rises another, one which is humanitarian in its essence, but which also should provide invaluable training to the student body; that is, the considerate, conscientious care of human beings in hospital wards and clinics; human beings who have trusted the tremendous issue of their lives and of their well-being to the members of the teaching staff.

THE BRITISH AND GERMAN SYSTEMS OF MEDICAL EDUCATION

It is easy to understand that these quite distinctly different tasks laid on the medical school give rise in themselves to many problems. If the problems that arise in this way were the only difficulties that existed, their solution would not be nearly so perplexing. Many of the difficulties are born from the fact that the driving energy of their ideals is derived from two distinct sources: sources philosophically and geographically, as well as temperamentally widely removed one from the other.

The old British ideal was one which dominated American medicine till the 90's of the nineteenth century. It was an ideal in which the medical

school was considered as a sort of adjunct to the hospital. Medical education was thought of as a sort of extension of the more ancient preceptor-apprentice system: a convenient and inexpensive means of giving the hospital an industrious and reasonably intelligent staff. In Britain the medical schools grew out of the preëxisting hospitals.

In Germany, on the other hand, the teaching of medicine became a university function in the days when all of the manipulations and much of the curative technique was in the hands of barbers and apothecaries, when it was considered unseemly for grave and dignified doctors to descend to manual labor in the aid of patients; days in which the authority of booklore was more potent than bedside observation. As a result of such conception, chairs of medicine developed, divorced from any close connection with hospitals. Then, in the mid-years of the nineteenth century, chemistry, physics, and a little later, pathology and the biological sciences, attained a great development in the various German universities; a development which drew many of the world's finest minds to teach and study there. It was only natural under the circumstances that between the biological sciences and the practice of medicine a pedagogical union came about, and through that union an enormous widening of our knowledge was consummated.

In this period of development of German medical teaching, few or any great minds were attracted to clinical medicine as such, and the result was that interest in, and knowledge of the biological sciences hypertrophied while the popularity of clinical medicine waned, and the personal interests of the suffering patients were seemingly lost sight of.

HOW THESE SYSTEMS AFFECTED AMERICAN EDUCATIONAL METHODS IN MEDICINE

Naturally that was but a phase in the development of mid-European medicine, yet it was a phase that reacted profoundly on medical education in our country; for many of our best young men were spending their impressionable years at the feet of German and Austrian teachers. The result was that German principles and German ideals of teaching, German forms of curricula were brought back and transplanted in the academic groves of the United States.

Unfortunately, or fortunately, as the case may be, the young fellows were unable to root out the long-established British ideal (in this country it was really Scotch), and the transplanted methods were adopted as a sort of addition to the then existing methods of teaching. As a result it was found that the philosophies underlying the two schemes were incompatible, and the group of those who believed in the older established methods, and of those who believed in the new ones, each went its own way, without much reference to the other. Two antagonistic and conflicting ideals were compartmented in the spirit of medical education, and, as may happen to the human being who segregates and attempts to suppress his soul's conflicts, a double personality was developed.

As the clinicians were, most of them, of the British ideal, and the teachers of the premedical subjects, proponents of the Continental, this double personality expressed itself largely in antagonisms and recriminations between the so-called scientists and the men who found themselves occupied in the clinics and wards. This conflict has done more to destroy harmony in medical teaching than any other single factor. It was so bad that at one time the word "clinician" carried with it a content of contempt that would have been amusing had it not been evidence of a state of affairs that was unhealthy and damaging, not only to the harmony of the profession, but to the progress of medicine and to the respect with which medicine was held by the public.

Fortunately the conflict is being resolved, and most of the young men engaged have reached a point of view based on the conception that the prime function of medicine is to relieve the suffering of human beings, and to leave the world a healthier place to live in, a better place for future generations to inhabit, and that in order to accomplish this, the ideals of the method of science, together with the principles of physiology and of pathology must provide an informing philosophy for the student at every point of his career.

LABORATORY SCIENCES AND WARD WORK NOT ANTAGONISTIC

The conflict between laboratory sciences and the work of the wards is seen to be a purely artificial creation of intellectual arrogance. Anatomy, physiology and biochemistry, as it is possible to present them in a medical curriculum, can do no more than to teach the future physician the language of his profession. The laboratories of diagnostic methods and the x-ray laboratories are only agencies that enable one who needs to examine a patient to carry his observations farther than it is possible when he has only his unaided sight and hearing to depend upon. The realization that these methods are simply extensions of the methods of physical diagnosis, and that the service to the patient is after all the reason for the existence of both clinician and laboratory worker, brings them both on an equal plane of mutual respect and understanding.

Nevertheless many of the problems which the medical schools must face arise from this conflict of ideals, and the source of conflicts lies in peculiar difficulties presented by the fact that so much of the teaching has to be done through a study of sick people. It is because this teaching material consists so largely of psychologically endowed, emotionally unstable human beings, that it becomes impossible to apply to medical education all of the pedagogical principles that are valid when we are dealing with more academic subjects.

RESPONSIBILITIES OF MEDICAL SCHOOLS

The responsibilities of medical schools, especially those that are funded through state aid or endowment, are very great. There is no one factor more essential to the power and progress of a nation than abounding health; and a high degree of health is attainable only when the art of medicine is vigorous and growing; when it is adding new facts to the store of its knowledge and sup-

plying a succession of men competent to apply these facts for the common good—some doing their part as practitioners of both curative and preventive medicine, some as teachers and others as investigators. It is obvious that if medical schools fail in these functions there can be no adequate advance in the art of medical practice, and that the nation will suffer. Undoubtedly it is a recognition of such things that has brought about the widespread epidemic of self-examination and unbridled attempts at reform that have afflicted medical schools during the past quarter-century, and which now threatens to break out again in perhaps a more virulent form.

If we can agree that the art of medicine and the biological sciences that serve it can and should be brought to the effective service of man; that the purpose of the medical school is to graduate men, wise, capable and well trained enough to provide the service, it will be in order to inquire how the school can best fulfill that purpose, with the greatest economy of money and of the human energy of its teachers and students.

FOUR MAJOR FACTORS IN A MEDICAL SCHOOL

There are four factors that must be integrated in the medical school: the teaching staff, the student body, the curriculum, and the physical plant, which although not the most important part of the four, still is a factor that will brook neither neglect nor undue economy, for on it depend the opportunities of the student for contact with adequate physiological, anatomical, pathological, clinical and not the least, bibliographic material. No medical school can afford to be weak in any one of the four factors, but undoubtedly, to insure strength in the personnel and character of the teaching staff, is the first step toward laying the foundation for greatness. Nothing is so important as the character, competence, and point of view of the men who are there to inspire the student body with enthusiasm for learning, and with an understanding of the applied humanities. At the present time the student body of any university medical school is made up of men who have been subjected to very severe processes of selection; once at the high school, again as they entered the university, and again at the threshold of the medical school. If there is any virtue in examinations and grade points, the profession is being recruited from intellects as highly developed as any in the country. Although it is probable that the previous training of the entering students is of relatively little importance to the finished product of the school, for the reason that from now on for five of the most impressionable years of their lives, the men must live in close contact with the enthusiasts who are leaders of their chosen profession. It would be an anomaly if such had not the power to sway the youngsters and to awaken similar enthusiasms of the spirit for one or another phase of theory or practice.

FRIEDRICH MÜLLER'S VIEWS OF AMERICAN MEDICAL SCHOOLS

Friedrich Müller has recorded his impression of a recent visit made to the more renowned medical centers of America, and he deplores the tendency that he discerns toward a weakening of the personal influence of individual teachers. Rightly or wrongly, he attributes this to our dislike for the didactic lecture and other forms of didactic instruction. He questions whether Osler's influence would have been so great and so enduring, had he not indulged in his daily formal demonstration clinic. There is real acumen in this criticism. Certainly no one can deny the immense value, as well as the pleasure to be derived from watching a great, or even a good mind as it formulates problems and brings the method of science to their solution. To some degree the student makes the pattern of the teacher's mind his own and carries away much more precious acquisitions than the mere information imparted by the lecture. Not that Müller would have all instruction given didactically, for he was much impressed with what he termed "the work-school" methods of American schools and clinics. I daresay that if we were asked to say what most clearly remained of the things we learned in our respective medical schools, and what things among those, retained for us the greatest value, most of us would agree in naming the ways of approaching problems and of considering them that we caught from those teachers whose personalities most impressed us while we were students. It is not the facts that they taught, but the philosophy, the shrewdness of observation and deduction, the clarity of discrimination that make us remember a Levi Lane and a William Watt Kerr as great teachers.

THE FOUR-YEAR MEDICAL CURRICULUM

In such an organization as we are considering, the study of normal physiology would be stressed during the first year, and continued with unceasing emphasis throughout the course. On the other hand the physiology of the abnormal, that is, pathology, would lightly be touched upon in the first year through weekly talks, illustrating how the normal processes of physiology, biochemistry, and anatomy become abnormal.

In the second year, after physical diagnosis of the normal has been taught and the methods learned applied to the detection of abnormal states, experimental pathology would be taken up together with bacteriology, for, after all, bacteria are the causes which originate a very large part of human pathology: and also this year seems to be the time best suited for a study of drugs as they act on normal and abnormal bodily states, and for a survey of the various therapeutic measures other than drugs.

The third year would afford the student the opportunity to concentrate on the commoner deviations from normal physiology, to learn how to interpret symptoms in terms of physiology, normal or abnormal, to study the phenomena of disease in the medical and surgical wards, and in the autopsy room, as well as in the laboratories of morbid anatomy and pathology. It is in this year that the students could well have their chance to learn history taking, mastering the ability to get an accurate record of what has happened to the patient, and to appraise the evidence justly,

while using the information gathered wisely; those are accomplishments that are too often undervalued. Nothing will repay a student more than patient effort given toward mastering the art of history taking.

By the end of the third year the student should have thoroughly grasped the idea that disease is merely the expression of the various possible deviations of physiological processes, and also that therapeutics is but a name given to the sum of all the various measures that medical men use with the hope that they may be able to restore bodily functions. By that time the young man should have acquired a clear understanding of principles, a fair amount of technical skill, and a high sense of his responsibility. If he has not, there is little hope that he will ever succeed in his chosen profession. If he has, it will be possible to allow him an increasing responsibility for the care of the patients, necessarily under close guidance, and with every opportunity to advise with, and take counsel from his seniors. So that during his fourth year the student's work becomes the application to his own patients of the methods and information he has previously acquired through coöperative study with his fellow students and teachers.

The fourth-year man should have been so prepared that the patient appeals to him as an individual out of adjustment with environment, and the readjustment of that individual as the fundamental problem of medical practice. For the man engaged in medicine, whether he be cloistered in research, or active in healing, this is "The Final and the Chief Good," as Aristotle posed it in his consideration of Ethics. All the activities of the research student, the investigator, the clinician, the therapeutist, serve this end, and are therefore subordinate to it. And as a part cannot be greater than the whole, so none of these can be greater than the end which they serve; therefore if these activities are to be fruitful and satisfying to those occupied with them, they must never lose sight of the final end, the greater good, which alone can justify them.

The student should have acquired a philosophy which is not made pessimistic by the knowledge that a perfect restoration may be impossible. Confronted by the incurable or the partially curable, he should be convinced that anything, however so little as it may be, a physician can do to restore function and to relieve distress, it is his duty to do, and that it is a duty well worth doing.

RECENT TRENDS IN FOURTH-YEAR MEDICAL SCHOOL WORK

The trend of policy in the more progressive schools at this time is to give the fourth-year man a greater share of responsibility for the care of patients. There is, however, no general unanimity of opinion as to how this can be done for the best advantage of both, the student and the patient.

One interesting attempt to solve this problem combines the use of a closely supervised clinical clerkship for third-year men; schools that use this method, cut lectures and other didactic teaching to the minimum. The third-year men are taught clinical medicine and surgery entirely in the wards; the students keep very complete histories of every patient seen; these histories are scanned frequently and critically by members of the staff, and frequent consultation seminars are held on the problems that arise during the study of each patient's case. Physiologist, pathologist, anatomist and pharmacologist may join with the clinical teachers in helping the students solve these problems. During these sessions, references to literature are indicated and the student is required to incorporate summaries of important significant articles with the history.

This method of developing the mental power and the interest of third-year men is pedagogically sound. It meets the general and fairly reasonable objection often made that the third-year students should not be permitted to work much in the wards, because they are not sufficiently informed, nor likely as yet to have developed a sufficient sense of responsibility.

By the end of the third year the supervision of the clerks during that year should have remedied both these defects, and the men should be possessed of efficiency and responsibility. The study of the histories will afford the supervisors a splendid insight into each man's progress, his strengths and weaknesses, and make it possible to do away with many of the burdens of examinations. So that, by the time the men have had a year of such training, most of them are competent to enter the fourth-year and to carry on work as out-patient physicians with the minimum supervision.

The only objection to the method is that it demands a large and interested staff of supervisors; to insure such a staff does make severe demands on the exchequer of a medical school. However, the stress is somewhat eased because the presence of a well-trained fourth-year class in the dispensary brings with it some possible economies in the administration of that department.

Should the fourth-year men be put to work in the out-patient departments, or assigned to work in this or that department, or to some special clinic, or would some other plan be more profitable for their training? That again is a question.

Out-patient clinical organization has grown up with but little thoughtful consideration of the use of patients for the purpose of teaching. The convenience of the clinician has been the chief consideration; how could he give the most rapid service, within the limits of efficiency, to the greatest number? That has been the problem attacked. In a dispensary organized with such an aim and guided by such a principle, the teaching, at best, must be casual, time-wasting and fragmentary.

In the plan now under discussion the fourth-year men are assigned their work in quite a different way than has been usual heretofore. It undertakes to make a radical change in the relation of the students to their dispensary work, a change possible only because these men come from a third year of intensive clinical training that has been scrupulously supervised. Students are assigned not to this or that special clinic; they are sent to an admitting clinic where, under com-

petent supervision, they become medical advisers to certain patients. Each man or woman of the class is introduced to someone who has come seeking relief, and is told that that suffering human being is his or her patient; so long as they both are attending the dispensary, the student is to be responsible for the patient's care, and is to be the sick person's medical adviser. He is to meet his patient by appointment, he is to examine and record his findings and check them up under the direction of the visiting physician, who is also an instructor of students. This physician decides on the need for consultation, and the student accompanies the patient to the clinics indicated, and records opinions and findings of the consultant clinic on the patient's record; he also gets from the various physicians who see the patient assignments of reading pertinent to the consideration of the case, and of these he must record salient summaries in the record, and on the total records of this year, his standing as a student is rated. No matter to which of the many dispensary clinics the patient's ills take him, the student follows him there; if he goes into the hospital, there, too, the fourth-year student goes. If there is reason to suspect that economic stress, or bad home conditions are contributing to the individual's ill health, the student goes to the home, investigates and reports to his chief, so whatever means of relief are needed, the young man can learn what these are and how best they can be applied. In a way, the idea makes a return to the old apprentice system, but with an improvement: the student is apprenticed to the clinic, and he learns there that clinical medicine exists for the benefit of these suffering human beings we call patients, and that, after all, the science of chemistry, physics, and biology serve the art, while the laboratories are the shops in which medicine forges the weapons that she needs for her ceaseless combat with the forces of destruction and death.

THE FIFTH OR HOSPITAL YEAR

At the end of the four years of such training, the young aspirant to a place in the ranks of the medical profession has to spend another year in training as a resident pupil in a hospital, for all authorities are now one in the conviction that an intern year spent in a hospital of the first rank is essential, not only for the benefit of the pupil, but as well, for the protection of the community. This increased experience, this greater sense of responsibility coming after the long novitiate should guarantee that the profession is recruited in a way that insures not only technical efficiency and intellectual power, but also high character in those who are to renew its life and to maintain its traditions.

Whether these individuals turn to the practice of medicine and surgery, or whether they return to the laboratory for a life devoted to investigation, after such a training they should have acquired a philosophy of life which will bring them to consider that no man can find a more exalted calling than that which has for its aim helping human beings adjust themselves effectively and comfortably to the world in which they needs must exist; a philosophy which will endorse the sentiment expressed by one of medicine's greatest foster sons, Louis Pasteur, when he wrote:

" . . . Nothing is more agreeable to a man who has made science his career than to increase the number of his discoveries; but his cup of joy is full when the result of his observations is put into immediate practical use. . . . "

University of California Medical School.

INDUSTRIAL DENTISTRY*

ITS TREND—INCLUDING SOME OBSERVATIONS ON EUROPEAN PRACTICE

By GUY MILLBERRY, D. D. S.
San Francisco

INDUSTRIAL dentistry in some form or other has been in existence for more than a quarter of a century. The first dispensary of which we have knowledge was established in Rio de Janeiro in 1900 in a soap, candle and glycerin factory, where three hundred employees are now engaged. It has been in existence ever since. Free service has always been rendered there, and no deduction in wages is made for time spent in receiving dental treatment.

In the United States the introduction of this form of health service was practically coincident with the war, when the problem of efficient labor was a matter of grave concern because the majority of the employed persons were to a greater or less degree disabled. Statistics show that over 20 per cent of the drafted men were rejected for dental defects.

At the Seventh International Dental Congress, held in Philadelphia in August, 1926, interesting data were presented on this question. Dr. E. L. Pettibone of Cleveland, Ohio, reported that, in so far as the information was obtainable, ninety-one concerns in the United States and Canada maintained dental dispensaries. A resolution was passed at this Congress to the effect that "Public dental care forms the continuation of dental care in the school and must be supplied by sick funds, hospitals, factories, the Army and Navy, and the like. It forms an integral part of the public health service in all countries."

There seems to be no definite trend toward establishing dental clinics in any particular field, for they are to be found in all types of industry, as in cash register factories, department stores, and Babson's service.

AMERICAN DENTAL CLINICS

Industrial dental clinics were available in 1926 in the United States to more than 400,000 employees, and dental service was rendered by 164 dentists, 42 dental hygienists, 100 nurses, and 57 clerks. Two-thirds of all these dental dispensaries were an adjunct to or placed under the direction of the medical dispensary. This is as it should be because it is a part of a general health service, and a single administration is sufficient.

Massachusetts, New York, Pennsylvania, and

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Ohio are the states where industrial dental service has been developed to the highest degree, probably because industrial development in all lines has progressed farther in those states. California has had but a sporadic interest in the problem. The California Raisin Growers' Association and the California Citrus Fruit Growers' Association have maintained clinics for a number of years. The Emporium, in San Francisco, the Oakland Mazda Lamp Company, the Southern Pacific Company, and the Paraffine Paint Company have maintained dental clinics also. There has been no active development here, however, chiefly because the dental profession has not taken the problem up with the executives of plants or concerns where a large number of persons are employed.

Some trade-unions in America have established dental clinics, but these are more commonly found in the East where foreign labor is employed, and the plan seems to be a modification of the European insurance system. This similarity is especially noticeable in New York, where the garment workers' unions employ their own dentist. A good many men look upon industrial dentistry as a disguised form of health insurance.

EMPLOYERS' VIEWPOINT

Not infrequently employees rise to become managers of departments or plants, or become employers of labor themselves, hence any form of service that will reach employees and prove to be beneficial to them is likely to be favored by those who have risen. Generally the man in the office has had more and better dental service than the man in the shop, although his economic status may not be better; from the standpoint of need, then, the man in the shop will require more of the attention of the company dentist.

Employers of labor are usually well informed regarding the need for and the value of good dental service. When consideration of this kind is asked by their own dentists, they have investigated and frequently inaugurated a dental health service for employees, especially in companies where some form of medical service already exists. Many of the industrial dental dispensaries in America have started in this way, though the dentists who promulgated the thought or plan had no personal ambitions to gratify.

The industrial dentist is not concerned with conditions under which men work, such as ventilation, illumination, sanitation, safety devices, and so forth; neither is he concerned with tours of inspection through the plant.

In part, the fundamental principles of industrial medicine, such as preventive, curative and educational procedures, apply equally to industrial dentistry. The health hazards of various manufacturing processes, the problem of poisonous gases, fumes and dust, physical examination, the correction of remediable defects, which cause minor disabilities and absence from work, are the concern of both dental and medical service.

Work in a candy factory is reported to be very detrimental to the teeth, yet sugar is a nonpoisonous substance. The abolition of the use of yellow phosphorus in match factories eliminated a very prevalent and serious disease known as "phossy jaw."

CHARACTER OF SERVICE—CURATIVE AND PREVENTIVE

What character and what volume of dental service shall be rendered? One hundred per cent of all people above the age of three years need some dental service, and they would be much better off if they received such service at least twice a year.

In most industrial dispensaries, however, the custom continues of rendering emergency service for the relief of pain and for the elimination of infection which may cause a disability. This is largely the heritage left to industrial medical and dental clinics by the "mine doctor" and "camp doctor" of former days.

Examinations of the mouth and teeth in more progressive plants are now made concurrently with the general medical examination of new employees and periodic reëxamination of old employees is frequently practiced.

An inquiry into the customary procedure in American industrial dental clinics elicited the information from more than 50 per cent of the correspondents that prophylaxis produced the best results both as to its influence on the health of the oral cavity and also as to its psychological effect upon the employees. This type of service has the effect of stimulating the demand for other types of service.

While esthetics plays no part in the problem of industrial dentistry, especially among plant workmen, service which aids in the improvement of health and efficiency and produces a better spirit of coöperation and good will among the employees is looked upon favorably by executives.

EDUCATION OF EMPLOYEES

Education of the employees in the need for and the value of good dental service is important. This is customarily carried on by means of pamphlets or articles published in the house organ. Well written, well illustrated information finds its way into the home through the worker. Such ideas and recommendations are much more likely to be followed in homes where economic conditions make the prevention of disease a possibility.

Education in the prevention of dental disorders is especially valuable for children, and in employments where the industrial worker's child grows up in the service of the company which employs his father it is advisable to carry this education to the children wherever possible. The Colorado Fuel and Iron Company at Pueblo, Colorado, have carried on an excellent educational service for children, employing a dental hygienist whose chief duty is to educate and care for the children.

Dr. Ellen Stadtmuller, in discussing children's care recently, stated, "When teeth are decaying and uncared for we have a center of infection which may exert its influence on the body generally." Clinical experience in dentistry supports this view.

RELATION OF TIME LOSS TO MEDICAL COST

Figures such as were given me a few years ago by the medical director of the National Cash Register Company will indicate to an executive

that the saving in lost time, which in this case amounted to $27,000 a year is well worth while. He stated that the joint medical and dental service was able to save an average of forty hours a year for each of five thousand employees, whose average wage was fifty cents per hour, which totaled $100,000. The cost of this service was $73,000 dollars. He stated further that the medical and dental dispensaries are looked upon as a part of the plant, just as much as the sales or shipping or manufacturing departments are.

Another element of cost which is deserving of consideration is transportation and hospitalization of ambulatory cases, where local service with a reasonably short trip will accomplish equally good results. Thus one company, operating extensively in several states, finds it advisable and satisfactory to arrange for dental service in certain centers rather than transport patients long distances and hospitalize them at a central point, with a greater loss of time.

In some instances overenthusiastic individuals have expanded the dental service until it became top-heavy and collapsed of its own weight. It is difficult to reinstate such a service. It is also unwise to employ any considerable amount of clerical assistance in an effort to prove a theory in connection with the economic value of dental service.

EUROPEAN INSURANCE PLAN

The European situation is somewhat different. There the insurance plan prevails generally. It is especially true in Germany, where every person employed must be insured and in England, where the Health and Unemployment Insurance Act is very generally applied.

In Germany, with a population of sixty-five millions, eleven dental dispensaries are maintained for workers. In New York, with ten million people, fourteen or more dispensaries are in operation; in Ohio there are sixteen; in Pennsylvania, seventeen; and in Massachusetts, nineteen dispensaries.

In England between thirteen and fourteen million people belong to approved societies, which avail themselves of the benefits of the Health Insurance Act. A great many of the approved societies use their surplus funds to pay in part for additional dental benefits, the patient paying the difference in cost. It has been estimated that $50,000,000 annually will be available for about fifteen million people in 1930, and that 50 per cent of them may avail themselves of this service. All of these people are compulsory contributors to the plan, but many will not use it.

I visited some of the industrial dental clinics, and one in particular interested me. It was one of the two dispensaries maintained by the London Omnibus Employees Association; there are thirty-five thousand members in the society. Three dentists, four nurses, and four mechanics were employed there whose hours of labor and compensation were fixed by the association. The only service rendered was the necessary prophylaxis, the extracting of teeth and making of plates. The volume of work to be done and the limited means at the disposal of most English workmen necessitate that form of service which will render the greatest amount of restorative service for the least expenditure of money.

I found generally on the Continent that, because of the compulsory insurance system, the largest percentage of the people pay little or no attention to the prevention of disease or to keeping well because they know the contributory plan makes it possible for them to go to the clinic or the hospital for service whenever they are sick. Ninety per cent of the people of Germany go to public clinics for their dental service. I visited forty dental schools and equally as many community, school and industrial dental clinics in western Europe, and in nearly all of the countries which I visited little effort is being made to maintain health and efficiency by keeping well.

The industrial dental dispensary has a very definite value in any plant where there is a sufficient number of employees (three hundred or more) to justify health service. The returns justify the expenditure made both as to time saved and good will earned.

The service in dentistry is quite satisfactory if conducted on a part-time basis, if, in the selection of the dentist or the staff, care is taken to choose persons who are capable and *interested* and who will remain long enough to establish and maintain a procedure that will be satisfactory to employer, employee, and associates alike.

1045 Clayton Street.

PRINCIPLES WHICH GOVERN REFLEX ACTION IN DISEASE*

By F. M. POTTENGER, M. D.
Monrovia

DISCUSSION *by Samuel D. Ingham, M. D., Los Angeles; Lewis Gunther, M. D., San Francisco.*

AN understanding of the principles of the visceral reflex is essential to the understanding of disease, yet no effort commensurate with its importance is made to understand the subject. Certain reflexes arising and ending in the voluntary structures are described in all textbooks, but the visceral reflexes receive very little discussion except in the writings of physiologists.

Disease expresses itself in symptoms. Symptoms are disturbances of normal physiology. A disease can rarely be suspected by the one affected until it begins to produce changes in physiologic action, such as discomfort, pain, or a disturbance in function of some organ, as the eye, heart, lungs, stomach, intestines, liver or kidney.

In order to understand the part played by the reflex in disease it is necessary to understand to what processes activity in the body is due. Activity of cells is automatic. In the viscera it exists independently of nerves and hormones, and takes place normally as long as their protein and lipoid masses are bathed in the physiologic salt-containing body fluids.

The hormones or chemical messengers are not for the purpose of causing action but of altering

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the action established by certain cells. They are more selective than the electrolytes found in normal body fluids. Apparently calcium on the one hand and sodium and potassium on the other bear a share in the activity of all cells of the body. They antagonize each other and when rightly balanced keep cellular activity within the bounds of physiologic equilibrium. The hormones on the other hand, through selective action, affect certain activities to the exclusion of others. They, however, form the chemical system for correlating activity in different parts of the body, and are thus a part of the mechanism which is provided for serving the more complex organisms.

FUNCTION OF THE NERVOUS SYSTEM

The nervous system, however, is the chief correlating and integrating system of the body, and causes a very complex organism made of many parts to function as a unit. From the central nervous system fibers go out to every muscle and gland cell in the body. The neurons going to the body cells are of two kinds: one for picking up stimuli and carrying them centralward, the other for translating stimuli into action. Every afferent neuron which carries stimuli centralward ends in the posterior root ganglion of the cord and the part which corresponds to it in the brain. From here the stimulus is carried further into the central nervous system by what are termed connector or intercalated neurons. Through these connector fibers every afferent neuron is able to join with every efferent neuron of the body. Thus is established a mechanism which is able to bring every part of the body into a close and harmonious relationship during conditions of physiologic activity; and thus is established, furthermore, a mechanism which is able to produce disharmony through reflex effects in any and every part of the body during conditions of pathologic activity.

While the body cells can function without nerves, yet their action is under the influence and control of nerves. There is a difference in the nerves supplying different structures. Thus we have the voluntary nerves supplying the skeletal structures and the involuntary or vegetative nerves supplying the visceral structures. The latter supply all smooth muscles and secreting cells, and in supplying the blood vessels go to every part of the body. The vegetative system is shown in Fig. 1.

There is a free and intimate communication between the various neurons of the voluntary system with each other, and the various neurons of the vegetative system with each other, and the various neurons of the voluntary system with the various neurons of the vegetative system, which binds together visceral and skeletal structures in such a way that action under either physiologic or pathologic conditions in one organ or structure of the body may influence other organs or structures through reflex action.

Whenever disease exists in the body it alters function in few or many structures. It may produce its effects in several different ways. It may be an infection producing bacterial toxins. It may exert a destructive action on certain tissues and cause toxins to be liberated from them. It

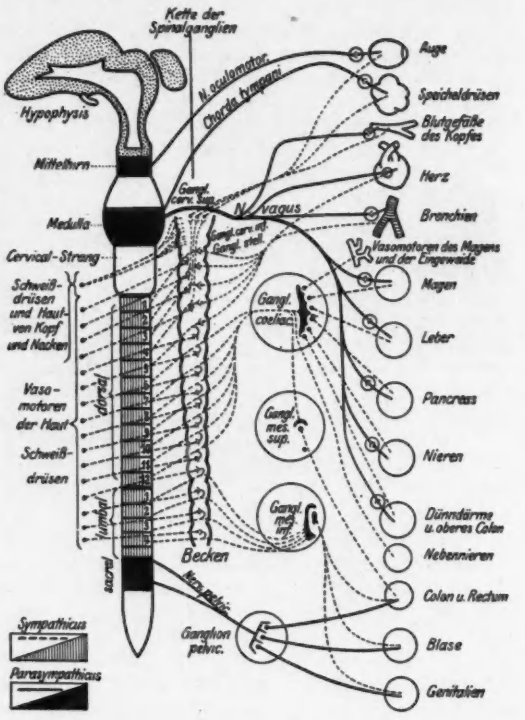

Fig. 1. Schematic Illustration of the Distribution of the Two Components of the Vegetative Nervous System, Showing Its Division into Sympathetic and Parasympathetic and Their Branches to the Various Organs.—The thoracolumbar portion of the cord, which gives origin to the sympathetic nervous system, is represented by lines. The portions of the midbrain and medulla, and sacral segments of the cord, which give origin to the parasympathetic system, are represented in black. The peripheral nerves belonging to the parasympathetics, are shown as solid black lines, while those belonging to the sympathetic system are shown as broken lines. This chart shows the double innervation of the structures of the head, heart, and the entire enteral system, and likewise indicates the single innervation for the blood vessels, pilomotor muscles and sweat glands of the body. (Symptoms of Visceral Disease.)

may interfere with the action of some important organ so that it fails to do its work and allows a retention of poisonous products to circulate in the body fluids. It may exert an injurious effect locally because of its assuming an inflammatory nature. Lastly, it may disturb function in other viscera reflexly.

We must attempt to find out in what way function is disturbed as a result of the above mentioned harmful influences. We assume that toxins which circulate generally produce harmful effects on the cells throughout the body. This affects to a varying degree the automaticity of the cells themselves and further affects them in the aggregate as found in definite structures and organs. Thus we assume that higher centers in the central nervous system, the nerves themselves, as well as glands, muscles and other peripheral structures, come in for injury from toxins.

Through their effects on ganglia in the central nervous system toxins produce harmful stimuli which are sent peripheralward, where they produce dysfunction. This is evident in cases of general toxemia where the equilibrium of the entire vegetative system is disturbed. The chief peripheral effect, however, is that of an oversympathetic

stimulation. The reflex is most evident in disease caused by definite organic inflammation. In such instances the inflammatory process causes stimulation of the sensory neurons whose receptors are found in the tissues affected by the pathologic process, beyond the degree of stimulation which is usual for that organ or tissue in health. These excessive stimuli cause impulses to be carried centralward and to be transmitted to efferent neurons which translate them into action often excessive in other structures.

This excessive action is represented as symptoms of disease. It may be a pain, or changes in distribution of blood, or a muscle contracture, or disturbed secretion in some gland. The reflex activity may affect only one organ or it may extend widely according to laws which we shall discuss later.

There are several groups of reflex symptoms possible in the presence of disease, such as: (1) from one part of the voluntary system to another part of the same system, as is met in inflammation of a joint; (2) from the voluntary system to the vegetative system, the principle of which is utilized when heat or blisters are applied to the surface of the skin in order to influence internal organs; (3) from the vegetative system to the voluntary system, as is illustrated by the muscle spasm in skeletal muscle in the presence of visceral inflammation; and (4) from the vegetative system to the vegetative system, as is witnessed so often in visceral inflammation and is especially well known in the so-called functional symptoms which affect one part of the gastro-intestinal canal when another part or a neighboring organ is the seat of inflammation.

TYPES OF REFLEXES MET CLINICALLY

Reflexes commonly met in clinical practice are: (1) the *motor reflex* in case of visceral disease, such as the spasm of the muscles of the abdomen in appendicitis, gall-bladder disease, and ulcer of the stomach; of the muscles of the shoulder girdle and diaphragm in tuberculosis of the lung; of the intercostals in pleurisy; and of the lumbar muscles when the kidney is inflamed as in tuberculosis of that organ; (2) the *sensory reflex* or pain which is referred to the surface of the body when important viscera such as the appendix, gall bladder, stomach, pancreas, urinary bladder, kidney, ureter, heart, lungs, and pleura are inflamed (this is not a true reflex, physiologically, but may be so classed clinically); (3) the *trophic reflex,* which shows as a degeneration of tissue when nerves have long been irritated by excessive stimuli, such as is best illustrated by the atrophy which takes place in the muscles and skin and subcutaneous tissue innervated by those cervical nerves which express reflexly the stimuli arising in the lung in chronic pulmonary tuberculosis; and (4) the *motor* and *secretory reflexes,* which are usually spoken of as functional symptoms for which the stimuli arise in one organ and are expressed in another, such as the motor and secretory changes in the gastro-intestinal canal caused by inflammation of the appendix, gall bladder, stomach (ulcer), lungs, heart, kidney, and genito-urinary organs, or the asthma resulting from nasal irritation and the cardiospasm and pylorospasm which result from various visceral irritations.

NATURE OF REFLEXES

Reflexes may be comparatively simple or very complex. While a reflex requires only three components: a sensory receptor to pick up the stimulus, a motor effector to translate the stimulus into energy, and a synapse, where the stimulus is transferred from receptor to effector, yet such a simple arrangement is probably never found. There are usually several and more often many neurons interposed between the receiving and affecting nerve. Therefore reflexes are, as a rule, quite complex.

The complexity of reflex action is provided for by the multiplicity of connector neurons in the central nervous system as previously mentioned, which connect the incoming nerve bearing the stimulus with all motor nerves of the body. This widespread connection is seen in strychnia poisoning where the resistance at the synapses is broken down and universal contraction of muscles may be reflexly affected from irritating any afferent neuron.

While widespread efferent paths are open to all stimuli, yet most reflexes arising in definite tissues and organs are expressed in certain other definite areas according to a well-established law, and when a departure from this regular course takes place it, too, follows definite laws, which will be discussed later.

Segmental Nature of Reflexes.—In order to understand visceral reflexes we must acquaint ourselves with the embryologic development of the body, for here alone can we acquire a comprehension of the segmental relationships which are fundamental to understanding the reason why action in a given tissue or organ, or a definite skeletal area, is expressed as a result of impulses arising in other definite tissues or organs. It is quite easy to understand the segmental relationships of such organs as the heart and stomach in prevertebrate life where underlying viscera and overlying skeletal structures are innervated by nerves from a corresponding cord segment, as may be inferred from Fig 2, in which each segment is complete in itself; but to understand the relationships of the viscera in the thorax and abdomen through the cranial nerves to the somatic structures of the head is not so obvious; yet it follows the same segmental law of body development.

In vertebrates segmentation for striated and unstriated muscle, as the relationship is shown

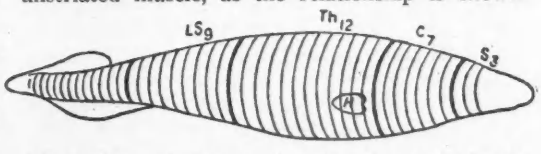

Fig. 2.—Diagrammatic representation of a primitive vertebrate animal—the amphioxus divided for convenience into three segments for the head, seven for the neck, twelve for the thorax, nine for the lumbosacral region, and an indefinite number for the coccygeal region. For clearness of comparison the heart (H) is represented as occupying the same position as in man, so that an adequate stimulus from the heart would cause pain in the distribution of the four upper thoracic nerves covering and protecting the heart. (Ross and Mackenzie.)

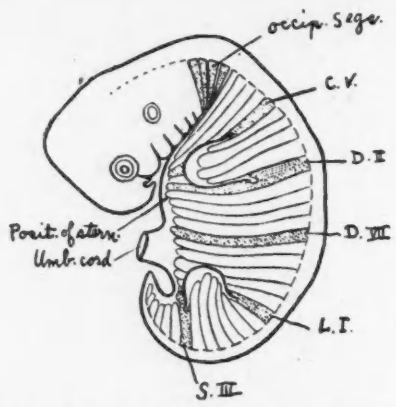

Fig. 3.—Diagram of a human embryo, fifth week, showing the arrangement and extension of the mesoblastic segments. The first and last of each segment entering into the formation of the limbs is stippled (C. V. and D. II, and L. I. and S. III). The position is indicated in which the sternum is formed. (A. M. Patterson.)

through spinal and sympathetic neurons, is evident throughout the entire length of the body. The lateral ganglia send connector fibers segmentally to the smooth dermal muscles just as the anterior roots supply the striated muscles of the body. Furthermore, connector fibers pass peripherally to visceral musculature through definite ganglia, thus connecting them segmentally with the somatic segments. The segmental relationship in man may be seen best in the embryo, as illustrated in Fig. 3.

The segmental relationship between the somatic and endodermal musculature in the vertebrates, as the relationship is shown through the cranial and parasympathetic neurons, however, is just as regular. The endodermal musculature was derived from the appendicular unstriated musculature of the invertebrate which was closely related segmentally to the head and face muscles. Thus in evolution, vagus innervation, which was related to definite somatic head and face segments in the invertebrate was carried as far as the colon as it developed into the digestive tube of the vertebrate.

So we must understand the striated skeletal musculature, the smooth dermal musculature and the visceral musculature, all as being related segmentally in such a manner that the relationships in the more primitive organisms are preserved in the vertebrate.

Reflexes are primarily segmental because the neuron connections of tissues belonging to the same segment are most closely connected. From a clinical standpoint this is extremely important, for it points the way for interpreting reactions which accompany disease.

One can interpret the origin and expression of reflexes only as one understands the manner in which the body has developed from more simple segmental organisms; and can understand them only by possessing a knowledge of the physiologic laws which govern reflex action.

THE LAWS OF REFLEXES

The Law of the Minimal Stimulus.—Sensory end organs in tissues are being subjected to stimulation more or less constantly; but they withstand a certain strength of stimulus before they pick it up and carry it centralward. All stimuli which are insufficient to effect the sensory receptor are called *subminimal*. The one which is just sufficient to effect it is called the *minimal stimulus*. Subminimal stimuli, if repeated in sufficiently rapid succession, are raised to minimal or even above, and cause impulses to be carried to the higher centers.

Each tissue or organ develops sense organs capable of picking up the particular type of sensory stimuli to which that tissue or organ is subjected. The somatic receptors are thus able to pick up and translate into its proper sensory manifestation such forces as heat, cold, light, sound, pinching, cutting and pressure, because the skin naturally comes in contact with all such forces and must develop the sensory end organs for them as a matter of defense. The internal viscera, on the other hand, do not meet conditions which require the development of many types of sensory receptors. The viscera normally never come in contact with such forces as heat, cold, light, sound, pinching and cutting, consequently have no sensory apparatus to pick up this type of stimulus. In order to carry impulses centralward the particular receptor found in an organ must be excited by the particular stimulus which it is designed to convey, and the stimulus must be at least minimal in strength. The term *adequate stimulus* is used to designate that the stimulus is of a quality to excite action. A stimulus cannot produce reflex action unless it be both *adequate* and at least *minimal*.

Sherrington's Law of Segmental Proximity.—Sherrington enunciated a law which governs the production of spinal reflexes as follows:

"Broadly speaking ***the degree of reflex spinal intimacy between afferent and efferent spinal roots varies directly as their segmental proximity.***"

And then, by way of making the law more explicit, he says:

"Taken generally, ***for each afferent root there exists in immediate proximity to its own place of entrance in the cord, e. g., in its own segment a reflex motor path of as low a threshold and of as high potency as any open to it anywhere.***"

I have suggested that in order to make this law complete it should be understood that this relationship of afferent and efferent neurons in the cord preserves developmental relationships; then it will apply to all viscera, including the lung which otherwise would be an exception, since its skeletal reflexes take place through cervical nerves (the union being completed by intercalated neurons), although the afferent impulses enter the cord through the upper five or six thoracic segments.

The somatic segmental nerves in which reflexes from the principal organs are expressed, according to Sherrington's law, may be inferred from Fig. 4, in which their sympathetic innervation is shown.

Law Governing the Spread of Reflexes.—When a stimulus is sufficient to discharge reflex activity over certain efferent neurons it produces as much activity in the skeletal muscle fibers innervated by those particular neurons as though the

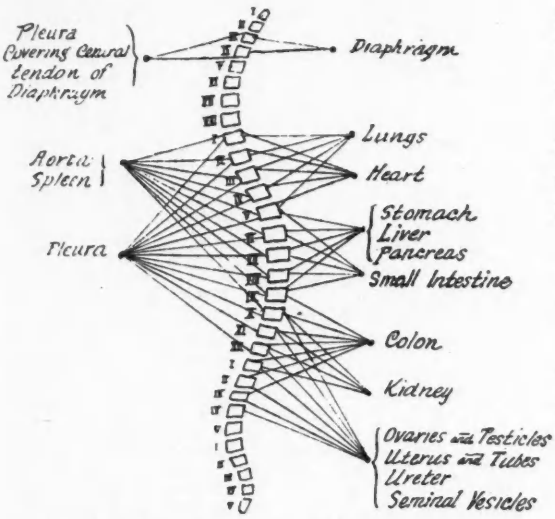

Fig. 4.—The connector neurons for the important thoracic abdominal, and pelvic viscera.

In the figure the connecting neurons are those which belong to the thoracolumbar outflow; except those going to the diaphragm, which are spinal nerves (phrenics). The motor cells for the viscera are found in the various collateral ganglia.

The figure shows that the innervation of the various viscera may be divided into groups. The heart and lungs are innervated from practically the same segments, the upper Ist to VIth thoracic. The stomach, liver, and pancreas from the same segments, Vth to IXth thoracic. The colon, kidney, and pelvic viscera from practically the same segments, IXth and Xth thoracic to IIIrd and IVth lumbar.

In spite of this grouping in innervation, each organ is brought in reflex connection with efferent neurons, both sensory and motor, which are more or less definite, in such a way that the motor and sensory reflexes do not overlap as much as might be indicated. (Symptoms of Visceral Disease.)

stimulus were many times stronger, according to the "all or none" law of activity. That is, when a muscle fiber contracts it produces a maximal contraction. A stronger stimulus cannot make its contraction stronger, but can express itself only by causing activity in more muscle fibers.

The corollary to this muscular action is that a minimal stimulus affects a minimal number of efferent nerve fibers, while a maximal stimulus spreads to many, thus widening the extent of the reflex.

VISCERAL PAIN

Visceral pain in a physiologic sense is not a reflex, but from the clinical standpoint we may be allowed to discuss it as such.

Most confusing to students is the fact that the source of sharp visceral pain is not in the organs affected; but such is true, as may be readily seen in the pain in the arm caused by angina, and pain in the epigastric region in ulcer of the stomach, whether the stomach has a high position as in individuals of sthenic build or is found at the pelvic brim, as in individuals of hyposthenic build, as pointed out years ago by Mackenzie.

There is a feeling of pressure or distention, and one of contraction, in such viscera as the stomach and intestines, that may be noted and found directly in the organ, according to Head. But a true sharp pain cannot be expressed by the sensory receptors of viscera which have never come in contact with or developed a sensory organ for detecting such sensations.

Head has announced the following law governing visceral, or *referred pain:*

"When a painful stimulus is applied to a part of low sensibility in close central connection with a part of much greater sensibility, the pain produced is felt in the part of higher sensibility rather than in the part of lower sensibility, to which the stimulus was actually applied."

It should further be noted that the projection of *referred pain* follows the same laws of the segmentation of the body as is followed by the visceromotor reflex.

In harmony with the preceding discussion, it can be seen that the visceral nerves must be very active in conditions of disease. They are disturbed by all toxemias, and they are irritated whenever a tissue or organ is inflamed. If the stimulation is sufficient it is followed by action in some or many other tissues and organs. Such action is abnormal although it follows the usual nerve paths. It is recognized as a part of the symptom-complex of the particular disease in question.

The best preparation for appreciating visceral reflexes is an understanding of the vegetative nerves, and the laws which govern reflex action. There are certain reflex disturbances in organs which can be produced by stimuli coming from many sources. Instances are cardiospasm and pylorospasm, which may be caused by stimuli from many organs such as the lung, gall bladder, appendix, stomach and intestines, urinary bladder, kidney or generative organs. The stimuli from the different organs here mentioned will enter the cord at all levels from the first dorsal to the upper two or three lumbar segments, but no matter where they enter, before mediation with motor neurons occurs, the impulses will be carried to that part of the cord, thoracic segments five to ten, from which the nerves supplying the pyloric and cardiac sphincters arise.

The fact that stimuli arising in so many organs can cause disturbed function in a single organ, and stimuli from a single organ can cause reflexes in so many organs, is very confusing in itself, but there are always other symptoms, very often other reflexes, which will help to indicate the organ which is diseased. Every important organ has through its afferent sympathetic nerves and their connection in the cord with spinal nerves particular areas for expressing reflexes in the skeletal structures, which are fairly definite, because they follow the laws of segmental relationship.

In my book on symptoms of visceral disease I enunciated the following law as governing the subject of visceral reflexes expressed in skeletal structures:[1]

"Every important internal viscus is so connected in the central nervous system that it is able to produce reflexes through afferent sympathetic and efferent spinal nerves, with definite skeletal structures; and, if acutely inflamed, should show motor reflexes and altered sensation (pain), and if chronically inflamed, trophic changes. Therefore, spasm of muscles, altered cutaneous sensation, and degeneration of muscles, subcutaneous tissue and skin, in areas having definite

limited segmental innervation become important diagnostic phenomena."

While the laws herein discussed as governing reflexes hold in most instances, yet reflexes sometimes fail to follow such laws. Fortunately we have learned some of the important reasons for such failure. We find causes at every physiologic level of the individual. The first cause may be in the cell itself. The electrolytes in the cell may not be present in proper proportion. It has been shown in the experimental heart, for example, that if calcium is in excess in the cell, stimulation of the sympathetic nerves may cause inhibition instead of acceleration.

Again the relative acidity of the tissues makes a difference in nerve reaction and might make uncertainty in reflex action.

Different hormones produce selective action on certain body cells, and when greatly in excess or markedly deficient might throw these cells into disharmony, which in turn might be reflected in any reflex action which was to be expressed in these tissues.

The nerves themselves become hypersensitive at times, their threshold of response becomes lowered and action takes place as a result of what under ordinary conditions would be *subminimal stimulation*. This is often met in clinical practice. We see it particularly in the toxemias of various kinds and in nerves which have been subject to prolonged stimulation, as occurs in such chronic conditions as pleurisy, pulmonary tuberculosis, pelvic troubles, and chronic kidney inflammation. The neurons connected with these organs become so easily affected, that is, their threshold of response becomes so lowered, that pain or discomfort is shown whenever any marked physiologic adaptation is required of the patient. Under conditions of tiring, worry, changes in weather, or other disease, the neurons connected with the particular, injured organ, respond with pain or discomfort, while sensory neurons from other structures react normally; so that, as far as they are concerned, the individual is entirely unaware of the extra load.

Last but not least, reflexes are altered by emotions. Through such harmful emotions as fear, anger, worry, disappointment, discontent, and unhappiness nerve reaction becomes altered, and this manifests itself in changes in the reflexes which are brought about by disease. In the presence of such emotions, reflex action is often exaggerated. We see this in the various disturbances of function in internal viscera and the exaggeration of referred pain.

If man were a machine instead of a thinking, emotional, physiologic and pathologic human being, our problems would be more like test-tube reactions, more certain but less interesting. It is the quest for the hidden, the concealed, the desire to understand the vagaries in man's reactions that make the study of medicine so interesting and so worth while. With a knowledge of the vegetative nervous system, an understanding of the physiologic action of the body cell, an acquaintanceship with the laws of the reflexes, and the factors which act to prevent reflex activity from following these laws, we have at our hand the key to the solution of many of our diagnostic and therapeutic problems.

Monrovia.

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1. Pottenger, F. M.: Symptoms of Visceral Disease, C. V. Mosby Co., St. Louis, third edition, 1925.

DISCUSSION

SAMUEL D. INGHAM, M. D. (1252 (Roosevelt Building, Los Angeles).—It is axiomatic that a knowledge of physiology is necessary for the interpretation of symptoms of disease. That Doctor Pottenger fully appreciates this, is demonstrated in his discussion of reflexes in the physiologic sense. Carried to a logical conclusion, practically all physiologic activities of the human organism may be considered as reflexes of more or less complicated patterns. It is interesting and important to consider how numerous and accurate are the self-regulating mechanisms which maintain equilibrium within normal limits in all of the vegetative processes of the organism; for instance, the bodily temperature, respiratory exchanges of gases, nutritional and metabolic balances, blood pressure and circulatory functions, internal glandular secretions and innumerable other mechanisms are automatically maintained within the limits of what we call normality. Each and all of these processes may be considered to be regulated through the agency of reflex activity.

It might fairly be said that all symptoms of disease may be read largely in terms of disturbed reflex activity. What seems to have escaped general recognition is that the reflexes manifested through the vegetative nervous system are as definite and as important as those manifested through the so-called cerebrospinal system. For interpretation a knowledge of anatomy and physiology is necessary, at least as regards basic considerations. Based upon the theory of evolution, we have come to consider that all spontaneous activities of the animal organism are essentially utilitarian in their nature, so that symptoms of disease are only variations of normal activities; so any bodily reflex may be hyperactive, normal, subnormal or absent, and clinical experience is necessary for its proper interpretation.

One field of the subject that Doctor Pottenger barely touched is that of reflexes which are dependent upon emotional activities, the disturbance of which have far-reaching consequences. Every emotional state has as a component part a definite, characteristic physical reaction pattern which is distributed through the efferent portion of the vegetative nervous system. Each reaction pattern, therefore, is in itself a reflex action. An unstable emotional equilibrium, while primarily acting or tending to act in a beneficial way in respect to the cause of the emotion, may be harmful in respect to the circulation, glandular activity or other important functions. In the presence of prolonged disturbance of the emotional reactions in an individual, the sensitization and conditioning of reflexes act to produce more or less permanent functional changes and establish unfavorable visceral habits. The clinical picture of neurasthenia may be interpreted largely in terms of such reactions.

The subject of Doctor Pottenger's paper is so large and so important that he might write a book as a supplement to his very excellent paper.

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LEWIS GUNTHER, M. D. (University of California Medical School, San Francisco).—The importance of the segmental arrangement of the central nervous system cannot be overemphasized. Since visceral symptoms are transferred to the periphery over the spinal nerve roots, it is obvious that an understanding of visceral pain presupposes a knowledge of the visceral reflex arc over which such transference takes place. Doctor Pottenger has amply supplied us with information regarding the nature of these reflexes, and the spinal nerve roots that take part in the reflex, in this paper, and in his book on the symptoms of visceral disease. It also stands to reason that a working

knowledge of the nerve-root topography must be possessed by the practitioner and student of medicine who desires to interpret pain.

In the interpretation of symptoms, cutaneous pain is a leading symptom. It may have its origin commonly at three sites, viz., in the peripheral nerve, in the nerve root, or in an internal organ. Medical students, as a rule, familiarize themselves with the outstanding examples of the visceral sensory reflex, more commonly spoken of as referred pain, in such conditions as gall-bladder disease, angina pectoris, and acute appendicitis. Of the three possible sites of origin of cutaneous pain, the nerve root has received the least attention. Since the sensory visceral reflex utilizes the posterior nerve roots for the transference of pain originating in an organ but appreciated at the periphery, the differentiation of symptoms having their origin in the nerve roots from those due to the sensory visceral reflex then becomes very important.

The visceral reflex has become a tool of utmost value to the medical profession, and for surgeons in particular. Just as the earlier failure to recognize the visceral reflex has led to wrong diagnoses, the present, fairly widespread lack of appreciation that cutaneous pain may have its origin in the peripheral component of the visceral arc, namely, the nerve root itself, has also led to unnecessary error in surgical diagnosis and procedure.

The hyperesthetic areas of Mackenzie, and the zone areas of hyperalgesia described by Head, associated with visceral disease, in very few instances occupy the entire area of distribution of the particular nerve roots which are included in the reflex arc. Examples might be cited such as the right lower quadrant sensory disturbances found in acute appendicitis where the maximum pain and tenderness is generally in the region of McBurney's point, the remainder of the tenth, eleventh and twelfth dorsal roots posteriorly being uninvolved; the right upper quadrant pain in acute cholelithiasis and cholecystitis, where the maximum disturbance may be over the topographical region of the gall bladder, at the end of the tenth rib, or at the angle of the scapulae, all of these points lying within the distribution of the sixth to ninth or tenth dorsal roots, but the major part of the distribution of these roots remaining unaffected; the pain of gastric ulcer which, although referred over the same roots as the former, is maximum in the mid-epigastrium. This is in contrast to the disturbances met with when the pathology has its origin in the nerve root itself. Objective and subjective sensory alterations in the latter usually involve the entire distribution of the root and are not infrequently bilateral.

Doctor Pottenger has pointed out that long standing pathology in a viscus allows subminimal stimuli to become effective, which ordinarily would not be brought into consciousness. This again is in contrast to nerve-root pathology, for a long-standing process in the latter, due to nerve degeneration decreases the conductivity of the nerve, and an adequate stimulus becomes inadequate. Cope has pointed out that the objective sensory alterations in the visceral sensory reflex consist of cutaneous hyperesthesia, as well as hyperalgesia. These sensory changes usually consist of alterations in light touch as demonstrated with the cotton tuft or a very light stroke with the pin point. Similar sensory disturbances may be found generally during the first five years of nerve-root involvement incident to a spinal osteoarthritis, and in early involvement of the spinal roots in other diseases of the spine. However, in either instance, the prolonged disturbance in the spinal nerve root ultimately results in a ***decrease in objective sensibility.*** In osteoarthritis the decrease rarely affects more than light touch as demonstrated with the cotton tuft, whereas in other diseases of the spine hypesthesia and anesthesia to all types of epicritic cutaneous sensation will occur. In all instances the alteration in sensation involves the ***entire nerve-root distribution.***

Diffuse pain, lying in the distribution of many roots, or marked sensory changes, especially a decrease in sensation, should stimulate a search for pathology outside of the viscera. Errors in diagnosis can only be avoided if the existence of cutaneous sensory disturbances, referred from pathology in the nerve root itself, is considered in the differential diagnosis of pain transferred to the periphery over the visceral reflex arc.

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Doctor Pottenger (closing).—In the discussion of this paper Doctor Ingham has well emphasized reflexes due to emotional activities. I have endeavored to emphasize this on many occasions. During the past fifty years medicine has thought too much in terms of structure. Physiologic balance may be disturbed just as much by emotional as by physical stimuli. Emotional reflexes make up a large part of the picture that we are dealing with in clinical medicine. He also emphasizes rightly the reflex nature of all physiological and pathological action.

Among other things Doctor Gunther makes an important distinction between the hyperesthetic and the hyperalgesic areas, as a result of visceral disease and the pain due to disease of nerve roots. The former may occupy only a part of the area supplied by a given nerve, the remaining portions being uninvolved. We see this constantly in reflexes from the viscera. The reflex relationship involves individual fibers rather than the nerve as a whole, while nerve-root disease involves the entire distribution of the given nerve.

The nature and laws of reflexes demand careful study on the part of medical men, because action in all parts of the body is correlated and integrated through the nerves and is subject to reflex effects.

In this paper I have endeavored to bring forth principles underlying the reflex, believing that if they are better understood, clinical symptomatology will be simplified.

TREATMENT OF MALIGNANT TUMORS OF THE BLADDER, WITH SPECIAL REFERENCE TO SURGICAL DIATHERMY*

By William E. Stevens, M. D.
San Francisco

Discussion *by J. C. Negley, M. D., Los Angeles; Joseph Walker, M. D., Los Angeles.*

SURGICAL diathermy is a term used to designate the coagulation and consequent destruction of tissue by means of a bipolar high frequency current. The heat is generated within the tissues because of the resistance offered by them. The degree of heat and depth of penetration are regulated by the amount of current in milliamperes, the length of time applied, the size of the electrode, the relative resistance of the different tissues between the electrodes, the loss of heat by radiation, and the loss of heat through the circulating blood. The highest temperature is at the point of contact of the smaller or active electrode with the tissues.

Tesla and d'Arsonval in 1891 found that heat was produced when the body was transversed by a high frequency current. D'Arsonval began the use of this current in the treatment of disease in 1898. Doyen advocated the destruction of tumors by electrocoagulation in 1907. Nagelschmidt coined the word "diathermy" in 1908. Corbus[1] states, however, that Kolischer of Chicago demonstrated the first patient suffering from a bladder neoplasm treated by diathermy in 1901. The former in association with O'Conor has used

* Read before the Urology Section of the California Medical Association at the Fifty-Seventh Annual Session, April 30 to May 3, 1928.

surgical diathermy exclusively for the destruction of vesical neoplasms during the last few years. Beer introduced his very valuable method of destroying bladder growths through the cystoscope in 1910.

The majority of bladder growths are epithelial in type. They may be simply, although comprehensively, classified as benign papillomata, papillary carcinomas, and infiltrating carcinomas. About 50 per cent of bladder growths are malignant. Almost one-half are located on the trigone or in the region of the ureteral orifices. Papillary carcinomas are much more frequent than the infiltrating type of growth. Many carcinomas are extensions from the prostate; according to Kaufmann,[2] 66 2/3 per cent. These facts should be taken into consideration in deciding upon the method of treatment of this condition.

SYMPTOMS AND DIAGNOSIS

In addition to hematuria, the cardinal symptom of both benign and malignant growths, induration, sloughing, necrosis and resistance to fulguration are important symptoms of malignant tumors of the bladder. If a pedicle is present it is usually thicker than that of a benign growth. Palpation through the rectum or vagina is often valuable in the diagnosis of this condition. Growths which are palpable are usually malignant. An accompanying severe cystitis, which is responsible for frequent urination and marked dysuria, is common. Carcinoma occurs more frequently in older patients, most often in the fifth decade. That some apparently benign growths are malignant and others thought to be malignant are benign, may be a reason why some published series show unusually favorable results. Carcinoma of the bladder is more common in males. In MacKenzie's [3] series of 118 cases of carcinoma of the bladder ninety-three occurred in males. The writer cystoscopes probably twice as many women as men and finds not more than half as many bladder neoplasms in women. MacKenzie also found an equal number of malignant and benign tumors in men and women patients. This corresponds with my experience.

RESULTS WITH VARIOUS METHODS OF TREATMENT

Although surgical diathermy has not been used so extensively nor for so long a period as surgery, radium, and the x-ray, sufficient time has elapsed to approximate the relative value of this treatment.

I. SURGERY

Sir John Thomson-Walker [4] states that, following 126 partial resections of the bladder for malignant growths, there was an operative mortality of 6.34 per cent. Of eighty-one traced survivors there were recurrences within three years in 27.16 per cent, and after three years in 6.17 per cent. There were no recurrences in three years or more in 34.50 per cent. Judd [5] states that following radical surgery for carcinoma of the bladder seventy-eight traced cases were living and eighty-seven dead. No doubt in every series of untraced cases a very large proportion are dead. Scott [6] and McKay's statistics show that at least thirty-six of sixty-six patients whose bladders were resected for carcinoma at the Brady Urological Clinic died or were unimproved. Four died from other causes. Thirty-eight per cent of sixty-three cases operated on by Young [7] were alive one to ten years after operation, and 8 per cent were alive over six years. Sixty-seven and two-tenths per cent of sixty-one cases operated upon by Lower [8] died, fifty-one and two-tenths per cent in less than one year. Eight were living less than one year after operation; five between one and two years, four between two and three years, one five years, one six years, one eight years, one ten years, and one eleven years after operation. Twenty of seventy-five patients operated upon by Squier [9] were alive two to eight years after partial resection. Thirteen of twenty-eight patients whose bladders were resected by Kidd [10] were cured. Following excision by MacKenzie in twenty-two cases twelve were cured, two improved, the growth recurred in six and two died. So-called cures were followed from six months to seven years, most of them from one to three years. Beer [11] operated on twenty-eight papillary carcinomas. The operative mortality was 14 per cent. The growth recurred in 25 per cent. Sixty per cent appeared to be cured. In Beer's series of infiltrating carcinomas there was an operative mortality of 21 per cent and recurrences in 55 per cent. Forty-five per cent of those surviving the operation were apparently cured. The bladder was resected in three patients in Negley's [12] series, two died, and no record was obtainable in the third case. Chute,[13] although favoring surgery, reports a 100 per cent mortality following total cystectomy.

As will be seen from these statistics the primary mortality, as well as that occurring during the first year following resection, is very high.

II. RADIUM

Barringer [14] reports that 15 or 75 per cent of twenty patients with papillary carcinomas who were treated with radium were cancer-free for as long as observed, eleven remaining so for more than five years. Twelve of these were proved malignant by pathological examination. Eighteen, or 35 per cent, of fifty-one patients with infiltrating carcinomas, also treated exclusively with radium, were cancer-free, twelve having remained so for more than five years. His series included those in which the carcinomas had been small and treated transurethrally as well as those in which radium had been implanted following suprapubic exposure. No cases were refused operation if the carcinomas were thought to be confined to the bladder. Barringer has never seen recurrence later than six years. Beer states that his results with radium treatment have not been nearly so favorable as those of Barringer. In sixteen cases he introduced radium emanation seeds through the cystoscope. Eight cases were apparently cured and eight recurred. In thirty-one cases in which he considered resection impossible he applied radium. The mortality was 33 per cent. Thirty

were apparently cured although all of these had not been examined cystoscopically.

Keyes [15] believes that radium treatment gives better results than surgery. As he has employed this method for only two years he states that he does not know how permanent the results may be. In five borderline cases there were no operative deaths and no cancer deaths. One died of cardiac decompensation ten months after radium application and four were controlled, cystoscopy showing absence of any tumor. Of nine cases of papillary carcinoma accounted for which were treated exclusively by radium five were "controlled." Of four cases of infiltrating carcinomas accounted for, all died cancer deaths.

Scott and McKay of the Brady Urological Institute report that, of thirty-four patients with malignant tumors of the bladder who received suprapubic implantation of radium, eleven died in less than one year, eleven others lived only one year, one lived only two years, and three died in less than one year from other causes.

One of the most objectionable features of radium therapy is the bladder spasm due to radium burn.

III. X-RAY

Mann reported a series of nineteen cases of malignant tumors of the bladder treated with x-rays. There were thirteen recurrences, nine dying in two years or less. The results were equally discouraging when both x-ray and radium were used. Water,[16] however, states that excellent results were obtained at the Brady Urological Clinic with a combination of x-ray and radium. Schmitz and Laibe [17] treated thirteen cases of carcinoma of the bladder with deep x-ray therapy up to April 1, 1925. Seven patients were free from symptoms, one for thirty-four months, two for twenty-six months, two for twenty months, and two for fourteen months. Three cases were "inconclusive" and three died. Twelve of the patients in Negley's series received x-ray treatment. Nine were dead and three, one of whom also received radium, were living one month to one year after treatment. Of these, however, one was unimproved and the growth recurred in the others. MacKenzie treated six so-called solid carcinomas of the bladder which he considered inoperable with deep x-rays. One died, three were unimproved, and two improved. Scott and McKay administered deep x-ray therapy to ten patients. All died of tumor. Beer also states that he has not had a single cure with x-ray therapy.

Objectionable features of x-ray therapy are burns and frequent local and systemic reactions.

IV. FULGURATION

Thomson-Walker [18] treated 119 cases of benign papilloma of the bladder transurethrally. There was no postoperative mortality, and 74.4 per cent were free from recurrence from one to eleven years. Twelve of MacKenzie's nineteen patients with malignant papillomas of the bladder were cured and seven improved by repeated fulgurations. So-called "cures" were followed six months to seven years, most of them one to three years. In Negley's series of malignant bladder tumors the twenty-six who were treated with cystoscopic fulguration were living from one month to two and one-half years after operation.

V. PERCY CAUTERY

In Negley's series seventeen patients were treated with the Percy cautery. Sixteen were dead.

VI. UNTREATED CASES

Bumpus [19] reports that the average duration of life in fifty-one untreated cases at the Mayo Clinic was but 10.64 months, from the onset of symptoms 2.7 years.

VII. SURGICAL DIATHERMY

O'Conor [23] reviewed fifty cases of carcinoma of the bladder treated exclusively with surgical diathermy either transurethrally or following suprapubic exposure by Corbus and himself during the seven years prior to July 1, 1926. There were four hospital deaths. Twenty were symptomatically well with negative cystoscopic findings for a period of from one to seven years. Twenty-six patients were uncured. The bladder wall was perforated in but one instance. This patient developed a vesicorectal fistula and died from general sepsis and myocarditis. Corbus states that most of the deaths following surgical diathermy occur because of urinary sepsis due to temporary obstruction when the ureters are coagulated. Scott and McKay on the other hand, reporting four cases of infiltrating carcinoma, the type of growth offering the worst prognosis, state that there was one postoperative death, one patient was free from tumor one year after operation; two died within one year after treatment with surgical diathermy. Kolischer, however, is even more optimistic than Corbus and O'Conor. He finds that the primary mortality is only 5 to 10 per cent, while about 75 per cent of the patients treated with surgical diathermy remain well. Joseph Walker in a personal communication states that he has had the opportunity of examining many of Corbus and O'Conor's cases long after treatment with surgical diathermy, and the results have been most satisfactory. He also had excellent results with this method of treatment in several of his own cases and believes it to be of greater value than any other procedure. Walther and Peacock [20] state that surgical diathermy has proved itself superior to other methods for the treatment of vesical neoplasms. Judd, although advocating total or partial cystectomy, recommends surgical diathermy when the growths are too extensive for radical removal and when there are contraindications to this procedure such as cardiac or renal disease. At the Mayo Clinic nineteen cases were treated with surgical diathermy. Although too short a time had elapsed to determine ultimate results "the immediate results were extremely gratifying." There was one hospital mortality. Of ten patients traced, seven were living and three dead. In Negley's series twenty-one patients were treated with surgical diathermy. Seven were dead from twelve days to seven months after operation and fourteen living from one month to two and one-half years after operation. Eisendrath [21]

surgical diathermy exclusively for the destruction of vesical neoplasms during the last few years. Beer introduced his very valuable method of destroying bladder growths through the cystoscope in 1910.

The majority of bladder growths are epithelial in type. They may be simply, although comprehensively, classified as benign papillomata, papillary carcinomas, and infiltrating carcinomas. About 50 per cent of bladder growths are malignant. Almost one-half are located on the trigone or in the region of the ureteral orifices. Papillary carcinomas are much more frequent than the infiltrating type of growth. Many carcinomas are extensions from the prostate; according to Kaufmann,[2] 66 2/3 per cent. These facts should be taken into consideration in deciding upon the method of treatment of this condition.

SYMPTOMS AND DIAGNOSIS

In addition to hematuria, the cardinal symptom of both benign and malignant growths, induration, sloughing, necrosis and resistance to fulguration are important symptoms of malignant tumors of the bladder. If a pedicle is present it is usually thicker than that of a benign growth. Palpation through the rectum or vagina is often valuable in the diagnosis of this condition. Growths which are palpable are usually malignant. An accompanying severe cystitis, which is responsible for frequent urination and marked dysuria, is common. Carcinoma occurs more frequently in older patients, most often in the fifth decade. That some apparently benign growths are malignant and others thought to be malignant are benign, may be a reason why some published series show unusually favorable results. Carcinoma of the bladder is more common in males. In MacKenzie's[3] series of 118 cases of carcinoma of the bladder ninety-three occurred in males. The writer cystoscopes probably twice as many women as men and finds not more than half as many bladder neoplasms in women. MacKenzie also found an equal number of malignant and benign tumors in men and women patients. This corresponds with my experience.

RESULTS WITH VARIOUS METHODS OF TREATMENT

Although surgical diathermy has not been used so extensively nor for so long a period as surgery, radium, and the x-ray, sufficient time has elapsed to approximate the relative value of this treatment.

I. SURGERY

Sir John Thomson-Walker[4] states that, following 126 partial resections of the bladder for malignant growths, there was an operative mortality of 6.34 per cent. Of eighty-one traced survivors there were recurrences within three years in 27.16 per cent, and after three years in 6.17 per cent. There were no recurrences in three years or more in 34.50 per cent. Judd[5] states that following radical surgery for carcinoma of the bladder seventy-eight traced cases were living and eighty-seven dead. No doubt in every series of untraced cases a very large proportion are dead. Scott[6] and McKay's statistics show that at least thirty-six of sixty-six patients whose bladders were resected for carcinoma at the Brady Urological Clinic died or were unimproved. Four died from other causes. Thirty-eight per cent of sixty-three cases operated on by Young[7] were alive one to ten years after operation, and 8 per cent were alive over six years. Sixty-seven and two-tenths per cent of sixty-one cases operated upon by Lower[8] died, fifty-one and two-tenths per cent in less than one year. Eight were living less than one year after operation; five between one and two years, four between two and three years, one five years, one six years, one eight years, one ten years, and one eleven years after operation. Twenty of seventy-five patients operated upon by Squier[9] were alive two to eight years after partial resection. Thirteen of twenty-eight patients whose bladders were resected by Kidd[10] were cured. Following excision by MacKenzie in twenty-two cases twelve were cured, two improved, the growth recurred in six and two died. So-called cures were followed from six months to seven years, most of them from one to three years. Beer[11] operated on twenty-eight papillary carcinomas. The operative mortality was 14 per cent. The growth recurred in 25 per cent. Sixty per cent appeared to be cured. In Beer's series of infiltrating carcinomas there was an operative mortality of 21 per cent and recurrences in 55 per cent. Forty-five per cent of those surviving the operation were apparently cured. The bladder was resected in three patients in Negley's[12] series, two died, and no record was obtainable in the third case. Chute,[13] although favoring surgery, reports a 100 per cent mortality following total cystectomy.

As will be seen from these statistics the primary mortality, as well as that occurring during the first year following resection, is very high.

II. RADIUM

Barringer[14] reports that 15 or 75 per cent of twenty patients with papillary carcinomas who were treated with radium were cancer-free for as long as observed, eleven remaining so for more than five years. Twelve of these were proved malignant by pathological examination. Eighteen, or 35 per cent, of fifty-one patients with infiltrating carcinomas, also treated exclusively with radium, were cancer-free, twelve having remained so for more than five years. His series included those in which the carcinomas had been small and treated transurethrally as well as those in which radium had been implanted following suprapubic exposure. No cases were refused operation if the carcinomas were thought to be confined to the bladder. Barringer has never seen recurrence later than six years. Beer states that his results with radium treatment have not been nearly so favorable as those of Barringer. In sixteen cases he introduced radium emanation seeds through the cystoscope. Eight cases were apparently cured and eight recurred. In thirty-one cases in which he considered resection impossible he applied radium. The mortality was 33 per cent. Thirty

were apparently cured although all of these had not been examined cystoscopically.

Keyes [15] believes that radium treatment gives better results than surgery. As he has employed this method for only two years he states that he does not know how permanent the results may be. In five borderline cases there were no operative deaths and no cancer deaths. One died of cardiac decompensation ten months after radium application and four were controlled, cystoscopy showing absence of any tumor. Of nine cases of papillary carcinoma accounted for which were treated exclusively by radium five were "controlled." Of four cases of infiltrating carcinomas accounted for, all died cancer deaths.

Scott and McKay of the Brady Urological Institute report that, of thirty-four patients with malignant tumors of the bladder who received suprapubic implantation of radium, eleven died in less than one year, eleven others lived only one year, one lived only two years, and three died in less than one year from other causes.

One of the most objectionable features of radium therapy is the bladder spasm due to radium burn.

III. X-RAY

Mann reported a series of nineteen cases of malignant tumors of the bladder treated with x-rays. There were thirteen recurrences, nine dying in two years or less. The results were equally discouraging when both x-ray and radium were used. Water,[16] however, states that excellent results were obtained at the Brady Urological Clinic with a combination of x-ray and radium. Schmitz and Laibe [17] treated thirteen cases of carcinoma of the bladder with deep x-ray therapy up to April 1, 1925. Seven patients were free from symptoms, one for thirty-four months, two for twenty-six months, two for twenty months, and two for fourteen months. Three cases were "inconclusive" and three died. Twelve of the patients in Negley's series received x-ray treatment. Nine were dead and three, one of whom also received radium, were living one month to one year after treatment. Of these, however, one was unimproved and the growth recurred in the others. MacKenzie treated six so-called solid carcinomas of the bladder which he considered inoperable with deep x-rays. One died, three were unimproved, and two improved. Scott and McKay administered deep x-ray therapy to ten patients. All died of tumor. Beer also states that he has not had a single cure with x-ray therapy.

Objectionable features of x-ray therapy are burns and frequent local and systemic reactions.

IV. FULGURATION

Thomson-Walker [18] treated 119 cases of benign papilloma of the bladder transurethrally. There was no postoperative mortality, and 74.4 per cent were free from recurrence from one to eleven years. Twelve of MacKenzie's nineteen patients with malignant papillomas of the bladder were cured and seven improved by repeated fulgurations. So-called "cures" were followed six months to seven years, most of them one to three years. In Negley's series of malignant bladder tumors the twenty-six who were treated with cystoscopic fulguration were living from one month to two and one-half years after operation.

V. PERCY CAUTERY

In Negley's series seventeen patients were treated with the Percy cautery. Sixteen were dead.

VI. UNTREATED CASES

Bumpus [19] reports that the average duration of life in fifty-one untreated cases at the Mayo Clinic was but 10.64 months, from the onset of symptoms 2.7 years.

VII. SURGICAL DIATHERMY

O'Conor [23] reviewed fifty cases of carcinoma of the bladder treated exclusively with surgical diathermy either transurethrally or following suprapubic exposure by Corbus and himself during the seven years prior to July 1, 1926. There were four hospital deaths. Twenty were symptomatically well with negative cystoscopic findings for a period of from one to seven years. Twenty-six patients were uncured. The bladder wall was perforated in but one instance. This patient developed a vesicorectal fistula and died from general sepsis and myocarditis. Corbus states that most of the deaths following surgical diathermy occur because of urinary sepsis due to temporary obstruction when the ureters are coagulated. Scott and McKay on the other hand, reporting four cases of infiltrating carcinoma, the type of growth offering the worst prognosis, state that there was one postoperative death, one patient was free from tumor one year after operation; two died within one year after treatment with surgical diathermy. Kolischer, however, is even more optimistic than Corbus and O'Conor. He finds that the primary mortality is only 5 to 10 per cent, while about 75 per cent of the patients treated with surgical diathermy remain well. Joseph Walker in a personal communication states that he has had the opportunity of examining many of Corbus and O'Conor's cases long after treatment with surgical diathermy, and the results have been most satisfactory. He also had excellent results with this method of treatment in several of his own cases and believes it to be of greater value than any other procedure. Walther and Peacock [20] state that surgical diathermy has proved itself superior to other methods for the treatment of vesical neoplasms. Judd, although advocating total or partial cystectomy, recommends surgical diathermy when the growths are too extensive for radical removal and when there are contraindications to this procedure such as cardiac or renal disease. At the Mayo Clinic nineteen cases were treated with surgical diathermy. Although too short a time had elapsed to determine ultimate results "the immediate results were extremely gratifying." There was one hospital mortality. Of ten patients traced, seven were living and three dead. In Negley's series twenty-one patients were treated with surgical diathermy. Seven were dead from twelve days to seven months after operation and fourteen living from one month to two and one-half years after operation. Eisendrath [21]

states that he is using surgical diathermy frequently in carcinoma of the bladder and is pleased with the results.

ADVANTAGES OF SURGICAL DIATHERMY

Surgical diathermy unlike surgery sterilizes the field. It does not open blood vessels or lymphatics, consequently there is no danger of disseminating tumor cells and thereby producing distant metastases. There is seldom any bleeding; therefore no time is lost ligating blood vessels. There is very little surgical shock. The heat is developed in the tissues and the degree of heat can be regulated; the depth of penetration is more accurately determined and the tissues may be coagulated to any depth. Its effect is immediate. The active electrode is cold when applied and it does not burn or char. Cunningham, Graves and Bovie [22] have devised a method of measuring the degree of heat induced in the tissues by means of thermocouples. Surgical diathermy is more accurate than radium.

Even if the patient's general condition warrants total cystectomy or even partial resection the operative mortality is much higher and the probability of secondary infection of the kidney much greater than that which follows surgical diathermy, especially if it is necessary to transplant one or both ureters. The discomfort suffered by the patient after total cystectomy is often worse than death. With surgical diathermy it is often possible to remove tumors in cases unsuitable for more radical operative procedures. If not cured patients at least live longer and are more comfortable. The pain and hemorrhage are always relieved.

TECHNIQUE

Although many bladder papillomata are originally benign, probably all are potentially malignant, and the statement that blood in the urine is a symptom that demands immediate cystoscopic investigation to determine its source cannot be too often repeated. Unfortunately every urologist still sees patients who have been given some urotropin or other internal medication, perhaps with a few bladder irrigations to control their symptoms. If the blood disappears from the urine the patient is discharged. Later when hematuria reappears the pathologic condition responsible for the bleeding may be far advanced and the prognosis hopeless. Fortunately, however, because of scant lymph supply, carcinoma of the bladder metastasizes late. The blood should be examined for syphilis in every case. Even with negative findings a short course of antiluetic treatment is often indicated as a diagnostic measure before subjecting the patient to any operative procedure. Walker mentions a very interesting case diagnosed carcinoma of the bladder which proved to be luetic.

When it is necessary to open the bladder preceding the application of surgical diathermy infiltration anesthesia of the abdominal wall, morphin and scopolamin, spinal anesthesia, or gas oxygen are most frequently employed. There is danger of explosion if ether or ethylen are used.

It has been my practice to treat all bladder tumors which were apparently benign as well as borderline cases through the operating cystoscope. One of the important advantages of cystoscopic treatment is the possibility of satisfactory inspection of the bladder soon after this procedure. MacKenzie believes that single or repeated fulgurations will cure one-third of the papillary carcinomas. In the presence of frank or suspected malignancy in those cases that have not responded to transurethral treatment I open the bladder suprapubically and apply surgical diathermy by means of the disc electrode. The latter is kept in close contact with the growth in order to prevent sparking and carbonization, which interferes with the penetration of the current. When pedunculated, the pedicle is severed with the galvanocautery or Paquelin cautery; the surrounding apparently healthy tissues, and then the tumor are thoroughly coagulated by means of surgical diathermy. The heat is applied slowly and gradually increased until it can no longer be tolerated by a gloved finger in the rectum or vagina. This finger also serves to elevate the base of the bladder, the most frequent site of malignant growths. In the absence of marked infection or bleeding the bladder is sutured without drainage. If suprapubic drainage is necessary a very small tube is used. This is removed as early as possible. If stenosis of the ureteral orifices occurs they should be dilated later through the operating cystoscope. The bladder should be inspected at intervals during the life of the patient.

CASE REPORTS

Case 1.—An unmarried woman, fifty-seven years of age, complained of marked frequency of urination when standing, for the previous five days. She had noticed blood in the urine for three or four days about every three months for the past fifteen months. She had suffered from infantile paralysis and had been crippled because of paralysis of the right leg since that time. The family history was not significant. Her urine contained numerous pus and blood cells. The phenolsulphonephthalein output was 12 per cent for the first and 10 per cent for the second hour. Blood urea thirty-nine milligrams per one hundred cubic centimeters. Cystoscopy revealed an irregular growth about the size of a walnut, and with a short pedicle, just posterior and external to the right ureteral orifice. The bladder mucosa was injected and somewhat trabeculated. The bladder was opened suprapubically, the tumor removed with the galvanocautery and surgical diathermy applied to its base. Pathological examination showed carcinoma. The bladder was closed around a mushroom catheter. Recovery was uneventful except for slight dysuria and frequency beginning nine days after operation and lasting a few days. No evidence of recurrence was found at a recent cystoscopy two years and one month after operation.

Case 2.—A married woman, forty-eight years old, entered the hospital with the following history: Fifteen years previously she had noticed blood in the urine. This disappeared immediately after taking some medicine prescribed by a physician. Four years ago she had a marked hematuria, due to a polypus which was removed through the cystoscope. Five weeks ago she voided blood for a week and suffered from severe pain in the suprapubic region which occasionally radiated down the thighs. These symptoms disappeared following rest in bed and opiates. Cystoscopy revealed a soft gelatinous sessile mass about the shape of a man's thumb at the site of the left ureteral orifice. Numerous small gelatinous masses were scattered about the margins of the larger growth. Biopsy proved this to be malignant. The x-ray films showed

no evidence of metastases. The bladder was opened suprapubically and the surgical diathermy applied. A drainage tube was inserted and the wound closed around it. Eight days later urine escaped from the lower angle of the wound. Cystoscopy at this time revealed a small raised papillomatous area at the site of the former growth. This was fulgurated and seven radium emanation seeds were implanted. A retention catheter was again inserted through the urethra. It was removed nine days later and there was no further drainage through the abdominal wound. Two weeks after the last fulguration a smaller red protruding area was fulgurated. Further cystoscopies, the last eleven months after operation, showed no recurrence of the growth. The patient stated that she had gained seventeen pounds and felt "fine." She died five months after the last cystoscopy from acute intestinal obstruction and shock following operation for the removal of gall-stones.

Case 3.—A woman, thirty-three years of age, complained of pain in the sacral region and occasionally of a little blood in the urine at the end of urination for a period of eight months. A physician had told her that she was suffering from tuberculosis of the kidneys. Her urine contained a few pus and an occasional blood cell. Smears and guinea-pig inoculations were negative for tuberculosis. Her bladder capacity was 240 cc. There was a stricture (F23) at the external urethral meatus. Cystoscopy revealed several regular indurated masses just inside the bladder sphincter extending from the internal urethral meatus to the region of the ureteral orifices. The latter were hidden by the growth. The Wassermann was negative. Diagnosis: Carcinoma of the bladder. The x-ray appearance of the pelvic bones was normal. No improvement having resulted from fulguration, the bladder was opened suprapubically and diathermy applied to the growths. The amount of heat was limited to that which could be tolerated by the gloved finger in the vagina. A drainage tube was inserted and the bladder and abdominal wall closed around it. Five days later the tube was removed and a retention catheter introduced through the urethra. The wound closed in about four weeks, but reopened when the retention catheter was removed. About four months after operation induration and thickening of the urethrovaginal septum was found on examination. This has gradually increased until at the present time the upper margin projects above the surface of the urethral wall and below the surface of the anterior vaginal wall. Biopsy revealed chronic inflammatory tissue only. The suprapubic fistula closed shortly after the insertion of a retention catheter through the urethra, but reopened when the catheter was removed. This was repeated several times before the fistula finally closed. The patient has gained twelve pounds in weight since operation, and at the present time, two years and three months after operation, there is no recurrence of the growth in the bladder.

Case 4.—An architect, sixty-three years of age, complained of hematuria and difficulty in urinating for four and one-half months and dysuria and frequency for one and one-half years. His sister had pulmonary tuberculosis, and a grandfather had cancer of the face. The urine contained numerous pus and blood cells. Examination of the bladder revealed a large sessile tumor the size of an orange on the right lateral wall of the bladder just inside the sphincter and another the size of a walnut at the fundus of the bladder. The median lobe of the prostate was enlarged. The protruding portions of the tumor were removed and surgical diathermy applied. The median lobe of the prostate was also removed. The patient died six days after operation. I believe that I made a mistake in performing a one-stage operation in this case and that the chance of recovery would have been much greater if the prostate had been removed at a later date. Pathological report: Carcinoma of the bladder. This was of the infiltrating type.

Case 5.—A man, sixty-one years of age, complained of frequent and painful urination of ten weeks' duration. For the past two or three weeks the pain had been continuous. He noticed blood in the urine on one occasion, several weeks before entering the hospital. His urine contained fifteen to twenty pus cells per high power field, many red blood cells and a light cloud of albumin. Phenolsulphonephthalein output was 15 per cent for both first and second hours. Blood urea thirty-five and twenty-five hundredths milligrams per one hundred cubic centimeters. There was moderate enlargement of the prostate gland. Cystoscopy revealed a sessile, flat, irregular growth involving the trigone and bladder neck. January 22, 1925, the bladder was opened suprapubically and surgical diathermy applied. The tumor was of the infiltrating type. Convalescence was slow. The patient left the hospital about one and one-half months after operation with some drainage through the suprapubic fistula. The delayed closure was probably due to the enlargement of the prostate. The patient was not seen after leaving the hospital, having taken up Christian Science. I am advised, however, that he is apparently in good health and following his usual occupation at the present time, three years and three months after operation.

Case 6.—A police captain, sixty-four years of age, had occasionally noticed blood in the urine during the previous two months. No other urinary symptoms were present and he had never suffered from other symptoms of genito-urinary disease. He had pneumonia and typhoid fever thirty years ago. He had had a slight cough and considerable postnasal discharge, due to sinus infection for a number of years. Occasional sonorous râles were heard over the midscapular region. Numerous extra systoles of the heart were present. The liver was enlarged, the lower border extending about four centimeters below the costal margin. There was no residual urine. The Wassermann was negative. His family history was not significant. Cystoscopy revealed a moderate enlargement of the prostate gland and an infiltrating sessile tumor the size of a large walnut at the site of the right ureteral orifice. The bladder was opened suprapubically. That portion of the growth above the surface of the bladder wall was excised with the thermocautery. The surgical diathermy electrode was applied to its base until the degree of heat could no longer be tolerated by the gloved finger in the rectum. The patient's condition did not warrant prostatectomy. A mushroom catheter was inserted into the bladder and the bladder and abdominal wall closed around it. Pathological report: Carcinoma of the bladder. The patient was out of bed nine days after operation. A phlebitis appeared in the left leg on the following day. This subsided slowly. Cough was troublesome. Spasmodic contractions of the bladder were somewhat troublesome, but disappeared following the escape of a large piece of sloughing tissue through the abdominal wound. There was a little nausea for several days one month after operation. Six weeks after operation a suppurating right epididymitis was incised and drained. The patient left the hospital three and one-half months after operation in fairly good condition although the suprapubic fistula had not completely closed. This was in all probability due to the enlarged prostate. Cystoscopy at this time revealed only scar tissue at the site of the former growth. He was able to resume his duties shortly after leaving the hospital and continued to work until about one week prior to his death from myocarditis one year after operation. No evidence of recurrence of the bladder tumor was found.

Case 7.—A rice miller, twenty-eight years of age, complained of frequent and painful urination of two weeks' duration. The urine had been more or less bloody for the same period. The urine contained numerous pus and blood cells. Cystoscopy revealed an injected bladder mucosa and a sloughing tumor about the size of a walnut and with a broad pedicle one centimeter posterior to the left ureteral orifice. This bled readily. The Wassermann was negative. The bladder was opened suprapubically February 4,

1928, and the pedicle severed with the galvanocautery. The base of the growth and surrounding healthy tissue were coagulated by means of surgical diathermy. The bladder was closed and a retention catheter inserted through the urethra. The latter was removed on the tenth day. The pathological report on the portion of the growth removed was benign papilloma, but I have no doubt that if the base could have been examined it would have proven to be malignant. The patient is free from symptoms and the bladder cystoscopically negative at the present time, six months after operation.

SUMMARY

Seven patients with carcinomas—four papillary and three infiltrating in type—were treated with surgical diathermy through the open bladder. Four are alive and free from recurrence—one three years and three months, one two years and three months, one two years and one month, and one six months after operation. Two died of other causes, but were free from recurrence—one, one year and the other, one year and four months after operation. One patient died six days after operation.

COMMENT

I realize that seven cases treated with surgical diathermy is a small series, but these, together with the increasing number of favorable results reported in the literature, justify the opinion of Corbus, O'Conor, Kolischer and others as to its value. In addition to prolonging life it adds much to the comfort of those patients who are not cured. I believe that we are justified in the conclusion that surgical diathermy is of greater value than any other procedure and that it is destined to become the most popular method of treatment of malignant tumors of the bladder.

870 Market Street.

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DISCUSSION

J. C. NEGLEY, M. D. (527 West Seventh Street, Los Angeles).—Since so many statistics are mentioned, we will study that phase first. From the literature and his own experience, he reports 1124 cases. For convenience we list deaths, recurrences and unimproved as Class 1:

Surgery (partial or total resection or bladder), 634—373, Class 1, or 58 per cent.

Radium (either through cystoscope or cystotomy), 152—82, Class 1, or 54 per cent.

X-ray (mostly inoperable or hopeless), 60—45, Class 1, or 75 per cent.

Fulguration through the cystoscope, 164—26, Class 1, or 6 per cent.

Percy Cautery, 17—16, Class 1, or 94 per cent.

Surgical diathermy through opened bladder, 97—37, Class 1, or 38 per cent.

Total number of cases, 1124—579, Class 1, or 51 per cent.

Further study shows cystoscopic fulguration rates lowest percentage in Class 1, perhaps due to earlier diagnosis, more tumors in benign class, smaller sized tumors and less infiltration. Study brings up again the plea and warning to the profession at large for reference of all hematurias or intractable bladder cases of any kind to the urologist for cystoscopic diagnosis.

Next lowest in Class 1, is surgical diathermy, through an opened bladder. The reasons for these results are very ably described in the body of Doctor Stevens' paper. Radium, next lowest in Class 1, presents cause for further thought for an enthusiastic and skilled user of radium: reports 75 per cent of cures in papillary carcinomas and 35 per cent cures in infiltrating carcinomas, while his colleagues, just as skilled but not so enthusiastic, report only 24 per cent of cures and 76 per cent failures. Surgery, next lowest in Class 1, seems to be rapidly losing favor, and articles in the recent literature on surgical diathermy treatment of bladder tumors by former exponents of surgical methods, would seem to indicate that surgical diathermy is becoming the method of choice. X-ray has next to the highest mortality rate, explained, perhaps, because it is used most often in hopeless or so-called inoperable cases. This explanation also holds for the Percy cautery cases, which I reported in 1927, for they were nearly all hopeless cases and the end-result would have been the same, regardless of the method used.

One is impressed in a study of this subject by two things: first, the multiplicity of methods used; second, the wide variance of results quoted by different surgeons. These facts lead to the conclusion that we are progressing rapidly in the treatment of bladder malignancy, but most of us are still pessimistic. My preference in treatment of bladder tumors is fulguration through the cystoscope, followed by x-ray, provided

the tumor is accessible and not too high a degree of malignancy. Large size alone should not deter one from using this method.

Surgical diathermy through the open bladder, followed by a course of x-ray, seems best in inaccessible or highly malignant tumors. In 1927 I reported twenty-one cases under this method, fourteen then living, but now I find that four have died and two have recurrences, which may be amenable to treatment. X-ray and radium have not become widely used because the average urologist knows little of their action, dosage, etc. Vice versa, x-ray and radium workers know little of the use of a cystoscope. Better coöperation would probably bring better results.

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JOSEPH WALKER, M. D. (7046 Hollywood Boulevard, Hollywood).—Doctor Stevens' conclusions and results verify the splendid work of Corbus and O'Conor and other originators of diathermy as the method of choice in treating malignant tumors of the bladder.

In saying that diathermy is the method of choice in treatment of this class of cases we cannot compare entirely the ***number*** cured and not cured. Statistics of cases subjected to resection or to diathermy are misleading, for the reason that far more advanced cases have been treated by diathermy than could possibly be treated by resection. For this, and other self-evident reasons, statistical judgment is not in agreement with the facts.

I think the case reports alone of Doctor Stevens furnish ample justification for the following questions and answers:

Does resection in any stage of a malignant tumor of the bladder offer anything more satisfactory than diathermy? It does not.

Is resection applicable to as large a number of cases as diathermy? It is not.

Is the surgical risk less with resection than with diathermy? It is vastly more.

Is the suffering of the patient more with resection than with diathermy? It is.

Is shock more with resection than with diathermy? It is.

Is the time in the hospital greater with resection than with diathermy? It is.

Then, is there any basis for an argument in favor of resection? There is none, in fact.

As to fulguration, as that expression is generally understood: Is the therapeutic-fulguration-diagnostic test justifiable as a method of treatment? I think the arguments against it outweigh those for it. At best, it seems to me, justifiable only in the aged and very weak. To me to wait for months or years to see if a growth is malignant when you know at once that it is potentially malignant before applying your best treatment, is a judgment no better founded than would be the judgment of a lawyer in saving his best evidence for his appeal.

My experience with radium and x-ray is too limited for me to express an opinion of any value. In a series numbering the same as Doctor Stevens' I have had one death and no recurrence after from one to three years. I have carefully inspected the bladders of many of the cases of Corbus and O'Conor three to five years after operation and can say, from my own experience and what I have seen of theirs, that on a basis of facts and results, surgical diathermy applied intelligently and with skill is of its own right the method of choice in the treatment of malignant tumors of the bladder. I feel sure that Doctor Stevens' frank report of his cases will give us all more confidence in attacking this the most unwelcome problem confronting urologists.

THE HOSPITAL AND THE INTERN*

By PERCY T. MAGAN, M. D.
Los Angeles

THERE exists at the present hour a very sharp division of opinion in medical circles concerning the education of students of the healing art.

One prominent group takes the position that the curriculum of today is too long, too severe, and uselessly encumbered with minutiae. These men are of the opinion that under current methods we are turning out a type of graduate unfitted and unwilling to cope with the problems and requirements of ordinary practice. Such are fervently insistent that fundamental and drastic changes as to amount and kind of subject-matter taught, methods of teaching, and manner of persons employed as professors, shall be inaugurated with all possible dispatch in the schools of medicine of our universities.

Opposed to the above school of thought stands another band of eminent medical authorities who, with equal fervor, maintain that the medical colleges of the present time are so far superior to those that have gone before that there can be no comparison. They aver that the curriculum is nigh unto the very zenith of efficiency, and that modern medical science is being dispensed to the student as ably and as thoroughly as conditions will permit.

AGREEMENT CONCERNING THE INTERN YEAR

Happily, however, in this maelstrom of conflicting opinion there is one point upon which both sides unanimously agree. I refer to the value of the intern year. While some men hold that the premedical period is unduly long and that the regular four-year course should be abbreviated, they are nevertheless agreed in the idea that the intern year must remain, and must be rendered more useful, by the best thought of the leaders in medical school and hospital management.

"THE WEIGHTIER MATTERS."

What now are the most important things owing the intern during this crucial year? What shall be the underlying scheme for his professional advancement? In his first and second years he has been indoctrinated with the basic sciences of medicine. During his third and fourth years he has been introduced to a didactic and clinical study of medicine, surgery, obstetrics, gynecology, and the specialties. Speaking by and large, his head has been very well filled for the most part with excellent medical material. But how to empty this knowledge in a wise and becoming manner onto his tongue and into his hands for the benefit of patients, he knoweth not. Speaking in the language of banking and commerce, his learning is to a very great extent a frozen rather than a liquid asset.

Now to my mind, the lares and penates—the household gods of the fifth or intern year, must hold it as their most sacred duty to liquefy, purify, and sanctify knowledge already acquired by the student, and release it for the benefit of afflicted

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man- and womankind. It is this that Minerva Medica requires at the hands of these priests of medicine who are charged with the responsibility of training the acolytes of her cult at the flaming altars of her hospitals.

How, then, shall this be best brought about?

RESPONSIBILITY

The fifth-year student taking his internship is as the eaglet learning to fly. These young eaglets are old enough and strong enough to fly. But there is a tendency to cling to the student rather than to the practitioner viewpoint, of thought and action. They fear to venture forth upon the untried air, or to trust their fluttering wings. But they must learn to fly. There are fine joys of service awaiting them in the wide areas of medical space. Hence it is incumbent upon their preceptors in the hospital to stir up their mental nest and drive them forth. When once they are launched upon the upbearing air and learn by glad experience the ecstasy of flight, how grateful will they be to the faithful preceptor, who flinched not from the hard task; "and who still swoops and flies beneath them, ready to catch them up if their powers should flag, and to bear them sunwards."

ATTENDING STAFF NEGLECT OF INTERNS

It is often difficult for hospital staff physicians to trust the intern to do things. Often sufficient responsibility is not placed upon him. He should be in direct charge of his patients. The chief and his associates should make rounds with him in the rôle of consultants, and later in private they should counsel and instruct. The tendency is altogether too great in many hospitals to give orders to the intern in much the same way that instruction is given to nurse or orderly. This is poor technique. The intern must be approached in such a way that he will think for himself, reason from cause to effect, and thus enjoy a steady development. Because of an attitude of overlordship upon the part of the chief, many an intern becomes fearful of his patients and of his profession. At the same time he develops much the same attitude toward his teachers that is attributed to the little boy who was interrogated once as to what would be his greatest ambition when he grew up. Quoth the lad: "To scrub my mother's ears." Simply to regard an intern as a poodle to follow around after the chief, wagging his tail in admiration of his master's wisdom, is to defeat the entire purpose of a genuine internship.

ETHICS

The average medical student learns little of ethics in a practical way. What he does imbibe savors of the letter which killeth, rather than of the spirit which giveth life. In hospitals approved for interns too much attention cannot be paid to the character, the ideals, and the ethical sentiment and tendencies of the physicians on the staff. As the twig is bent, the tree will incline. Many a fifth-year student reaped a valueless harvest due to the germination of seeds sown in his soul by chiefs who during his hospital service days gave way in his presence to actions and remarks professionally immoral and unethical. Abuse of fellow practitioners, disparagement of their modes of treatment should never be indulged in the presence of an intern. These preceptors should be men who are scrupulous in their guardianship of their brother's good name. They must be men who will never for a moment countenance quackish or questionable methods of practice. In all their association with their fellows and patients they should partake of the spirit of Solomon of old, concerning whom it was written that "God gave him wisdom and understanding exceeding much, and largeness of heart, even as the sand that is on the seashore." Too frequently hospitals become hotbeds of gossip and criticism. In this respect they often call to my mind a remark of William Ewart Gladstone, England's great Prime Minister of the Victorian era. A Mr. Purcell had written a "Life of Cardinal Manning." The book abounded with criticisms of the venerable churchman. His motives, character, scholarship were picked to pieces in a most scathing manner. After making a thorough review of the work, Gladstone laid it aside with a heavy sigh, opining withal: "It leaves nothing for the Day of Judgment."

TEACHING THE ART OF MEDICINE

During the four years of his regular work in medical school the student learns much more of the science than of the art of medicine. This is to be expected and, in fact, cannot very well be avoided. Consequently the burden of initiating him into the art of his calling must and can be undertaken best at the hospital.

Too many young practitioners lose out because they manifest impatience and irritability with a crabbed and refractory patient. They need by precept and example to be instructed in the science of amboceptor, that mysterious substance which serves to connect the invading cell with the complement in such manner as to render it harmless to the body tissues. He must be taught how to cultivate that fine sort of positivity which nevertheless is leavened withal by a splendid power of attracting negative bodies to himself. Now and again there come to the medical college with which I am connected, students, feminine in gender, and of the genus spinster, who prior to turning their thoughts toward medicine have devoted their talent to training the child in the way he should go. I have noticed occasionally that some of these make a failure of the practice of medicine, and my observations have led me to the conclusion that a certain commanding attitude, undoubtedly acquired during the days when they presided over a group of youngsters in the schoolroom, was the underlying cause of disaster. In dealing with unappreciative patients a flank attack is far better than direct assault—an "enveloping movement," as the military tacticians would term it, more productive of good results than an artillery barrage. To speak in parables sometimes accomplishes far more than the argument of a wise logician.

Again, it is in the hospital that sympathy for the patient must be inculcated. A chief of high ideals can be of immeasurable service to an intern

in this respect. To train him in heart and demeanor to enter into the very life woes and agonies of those who have entrusted themselves to his keeping is to endow him with the gold of Ophir. All too often is the intern trained most exactingly in the minor technicalities of his trade—trained to "pay tithe of mint and anise and cummin, while omitting the weightier matters of the law, judgment, mercy, and faith: these ought he to have done, and not to have left the others undone."

SPIRITUAL AND MORAL CULTURE

Daniel Webster was once asked, "What to your mind constitutes the greatest proof of the Christian religion?" He answered in one touchingly brilliant sentence, "An old aunt of mine in the state of New Hampshire." In other words, ideals, morals, spirituality are things to be lived, and not merely abstract thoughts to be mentally assented to.

When I speak of morals and religion in medical training I am not referring to creed, churchfellowship, or dogma. I am endeavoring to impress upon the chiefs of staff and their assistants that the building of real character in the coming generation of doctors is a mighty task that is laid at their door. This is that priceless jewel which the Great Apostle so aptly defines as the "hidden man of the heart." Among all the adages to which the ancient Romans gave birth none is more pregnant with deepest meaning than "Nemo laeditur nisi a seipso"—no man is injured except by himself. The average youthful practitioner of medicine is quite apt to blame everybody else but himself when things go wrong. A capable chief can guard him well and guide him true in this important matter.

A physician's character is "what God sees him do in the dark." Hippocrates recognized that the profession of medicine is supported by two pillars—science and morals or religion. I greatly fear that at the present time we are paying too much attention to the former, and too little to the latter. We are exalting to the highest heavens, though perhaps none too high at that, the importance of the guinea-pig side of medicine, but we are doing but little to inculcate the basic, spiritual foundations of our vocation.

A TALE OF THE SEA

Our situation reminds me somewhat of a story I once heard an old, retired sea captain tell. This particular skipper regarded education as usually imparted in our universities as the plague of mankind. I was begging him one day to employ some of the young men from the college of which I was dean during the midsummer vacation. He was president of a large publishing concern. He stated tauntingly that no college student or young graduate was any good. He told how in days gone by he was wont to sail out of the port of Boston; how the students and young graduates from Harvard University would come and plead with him to give them jobs; and how he never considered them worth employing. But one time he did hire one. This particular fellow was, in many ways, very brilliant. My skipper friend took him on as a common seaman before the mast, at a salary of $10 a month. His mates thought he was a wonder. He became the darling of the forecastle. He could recite Shakespeare most dramatically, and at the rate of an entire play at a time. The lines of Ovid fell from his lips like the waters from the Falls of Minnehaha. The most abstract logarithms and problems were as nothing to him. He had only one trouble: he couldn't stay sober. Three-quarters of the time he was two sheets in the wind. One day when the vessel was rolling in a heavy sea, as he went staggering, dead-drunk, down the deck he ran afoul of the old master. In a towering rage my skipper friend began: "Jack, you miserable fellow, you ought to be ashamed of yourself. Here you are, versed in Greek and Latin, science, and the English classics; but you are filthy drunk most of the time; I have a good notion to put you in irons." "Yes, Captain, but you ought not to expect all the cardinal virtues for $10 a month."

Mr. Chairman, this little tale illustrates a vital principle. It is of little use to train young men in anatomy, physiology, medicine and surgery, in all the hidden arts of clinical microscopy, if we neglect to make them disciples of the cardinal virtues. Failing in this, we are simply putting weapons in their hands that will make them tenfold more the children of hell than they could possibly be without them. There is a mighty lesson to be drawn from the Great War: that it is dangerous to know too much of some things without the balancing power of other things. The cataclysm through which we recently passed clearly revealed that we knew too much about high explosives, poison gases, and deadly weapons, but altogether too little about the difference between a sacred treaty and a scrap of paper; or between frank, open and aboveboard dealing between nations and the subterranean mazes of secret diplomacy. In other words, the appalling catastrophe which overtook the world in 1914 was the end-product of those metabolic processes which involve too much scientific and too little moral training.

QUACKS AND CULTS

I have thought much about the quacks and cults and medical crooks with which the earth is reeking today. If these people are only ignorant enough they do not need to be, and are not crooked. Their success is in proportion to their ignorance. A cultist, if his ignorance is only dense enough, can honestly believe that adjusting the sphenoid bone will act as a magic cure for acute nephritis. His density acts as salvation against wilful dishonesty.

On the other hand, the better educated a medical man is the greater the necessity for the very finest grade of moral fiber and integrity. Unless that man has the interests of his patients, physically and financially, at heart he is going to subject them to a multiplicity of tests and procedures which in his heart of hearts he knows, as far as their particular case is concerned, are absolutely worthless. He is going to hold patients himself, and doctor them till they die, while piously talking about the providence of God, and the mys-

teries which we will not understand until we reach the other shore, when his innermost soul tells him that the poor man or woman might have been alive and well if he had only turned him over to a doctor of greater experience and skill. He is going to keep a lot of neurasthenic women wearing down their husband's fortunes and his office carpet, while he hands them out silly remedies for still more silly diseases instead of boldly and honestly telling them that what they need is to go home and make a pleasant day out of doing the family washing. He is going to operate on cases that he knows do not need the operation nearly so badly as he imagines his exchequer needs the dirty fee that he can filch from them. He is going to keep men and women on the operating table for two hours when someone else could get them off in one. The mere fact that he gets into the peritoneal cavity when he is trying to get into the bladder means nothing to him so long as in his crude way he gets some experience, and can keep the nurses and his assistants fooled as to his real rottenness. In other words, his limited knowledge of science has only served to make a consummate scoundrel out of a simple sinner.

My friends, it is things like this that may bring disgrace on our profession. It is true that men must learn, that they must make beginnings, and so it will ever be. But there are right and safe ways of learning and of making beginnings. Medical teachers must have enough backbone and moral fiber to weed out from their institutions of learning, even in the intern year, young men who do not have the proper moral or scientific attitude and foundation. The mere fact that a student is able to make his grades and pass his examinations is not a sufficient reason for handing him a diploma. There are greater things than per cents and examination marks. The mere fact that a student can pass a few examinations does not prove by any means that he is fitted to be a doctor and take the lives of men and women in his hands. This is such a superficial method of proving the proposition that it is positively puerile.

Today too many are entering the medical profession without really loving it. It may be that the mothers of some of these gave them consciences, but if they did, the boys were unable to raise them. "Too many are entering the medical profession without good working consciences, without the keen appreciation of the difference between right and wrong; too many are coming into an honored and honorable calling with low standards of trade and traffic in their souls. . . . The medical profession must be maintained as a place where righteousness reigns and no mean thing may live."

We need doctors today possessed of the deepest kind of simple sincerity. Men in whose care the frailest maid will be as safe as under the watchful eye of the fondest and purest mother. Physicians are in the very nature of their profession subjected to temptations far beyond those that come to men and women in any other calling in life. Life secrets and tragedies are bared to them in sacred confidences, and sympathy and comfort is sought at the altar of their hearts and hands. How necessary therefore that the moral atmosphere surrounding our own souls be pure as the gentle dawn.

In ancient days the art and science of medicine was entrusted to the priests. This was so when Moses was lawgiver in Israel and Tut-ankh-Amen was king in Egypt. Today nominally and outwardly the ministry and medicine are separate and distinct. But in a deeper, better sense it is not so, and so long as time shall last, and seasons come and go, men and women will come to their doctor with their sorrows and their woes. We must be equipped to bind up the broken-hearted, to assuage the grief of the downcast, and to give to all, beauty for ashes, the oil of joy for mourning, and the garment of praise for the spirit of heaviness. And if these be the lodestones of our lives, then in the beautiful language of Strudwick:

"Neither the apathy of friends, the cold neglect and deep injustice of legislation, nor pampered quackery and empiricism can stay its onward course. True medical science will, like the majestic oak, withstand the shock and storm of every opposition. It has been beautifully compared to a star, whose light, though now and then obscured by a passing cloud, will shine on forever and ever in the firmament of Heaven."

312 North Boyle Avenue.

THE ASPHYXIATED INFANT*

By VERNON L. WARD, M. D.
Ogden, Utah

DISCUSSION *by Leslie A. Smith, M. D., Ogden, Utah; Eugene H. Smith, M. D., Ogden, Utah.*

ALL too often, following delivery, the infant that has been alive during the labor fails to breathe, in spite of measures for respiratory stimulation which we employ. Sometimes the heartbeat stops during the labor or it may fail to beat immediately or shortly after birth. We call the above condition asphyxia neonatorium and take the fatalistic attitude that nothing can be done to prevent it. The oftener we observe labor and birth the more impressed we are with the belief that asphyxia neonatorium is not a diagnosis, but only a symptom of some condition that causes delayed respiration or even death of the infant. The responsibility for the infant's death should be ours, if this causative condition is not guarded against.

The actual percentage of preventable infant deaths is given by some as 70 per cent. Study of reports made within the last few months indicate that the probable preventable deaths in the best institutions of this country average 20 per cent or less. Outside of such institutions where control of procedure is under varying responsibility, infant deaths will reach a higher average. It was brought out at the last meeting of the Obstetric Section of the American Medical Association that the intranatal and neonatal death rate had increased 10 per cent in the last few years.

What can the possible causes for these infant

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deaths be, where no evident unavoidable condition accounts for them?

Certain definite possibilities arouse our suspicion. The first is that these asphyxias may be due to serious brain injuries. Opinions and investigations regarding brain injuries have gone through various stages of evolution. Several years ago all injuries were believed to be due to gross hemorrhages into the brain tissue. This belief was followed by the discovery that tears in the tentorium and falx were common lesions of intracranial injury. The credit for this discovery is due to Beneke, who, about 1910, proposed a technique for opening the fetal skull, through the adoption of which these tentorial and falx tears became and still are the commonly demonstrable lesions of intracranial injury. More recently, however, as a result of studies carried out by Schwartz of Germany and published in 1924, it was demonstrated that small hemorrhages and distinct areas of degeneration are common in the substance of the brain of the newborn. These areas of degeneration are found in the white substance of the hemispheres and in regions drained by the terminal and lateral ventricle veins, while the hemorrhages are within the areas of these veins and those of the great vein of Galen and the vena choroidea. Schwartz states that these lesions can be recognized macroscopically in 65 per cent of all infants up to the age of five months. After careful microscopic study of infants dying up to thirty days after birth, Schwartz believes that only a very few infants fail to show traces of such brain injuries. Similar areas in the caudate nucleus and pons have been found also. It is believed that hemorrhage and edema in these areas is a common cause of respiratory depression or paralysis. A case in particular, autopsied by Lundsden, illustrates that Lundsden had done research work on cats to locate exactly the automatic respiratory center. He found in this case a hemorrhage into the pons, which he believed had caused paralysis of the respiratory center. Corroborative evidence of the frequency of these hemorrhages is seen in the high incidence of retinal hemorrhages, the result of congestion and trauma during birth, reported by Jacobs; and Voss has shown that similar hemorrhages are frequent in the middle ear. It has been observed that "hypersensitive" "spastic" infants and infants called "spitters" and "vomiters," commonly follow hard labors, and it is suggested that these conditions are due to similar brain lesions.

TENTORIAL AND FALX TEARS

Tentorial and falx tears are caused by an increase in the longitudinal (vertical) diameter of the head with elevation of the vault. This can be definitely demonstrated in a properly prepared specimen by artificially molding the skull so that the vault is raised. This longitudinal diameter will be increased whenever there is deflexion of the head, for then the forces tending to mold the head will act on the transverse and anteroposterior diameters, and will result in an increase in the vertical diameter. This will also occur in the after-coming head except when it is fully flexed. Thus tentorial and falx tears will be least likely to occur when a perfect suboccipito-bregmatic diameter comes through the pelvis, because then the parietal bones will tend to overlap and what lengthening occurs will be in the less dangerous anteroposterior diameter. One can readily understand why these hemorrhages are common following "easy" or precipitate labors. In the roomy pelvis proper resistance is lacking; the head comes through in deflexion and what molding occurs is in such a direction as to raise the vault of the cranium. Forceps, unless applied on a fully flexed head, will favor the same condition, while resistance to the after-coming head will always raise the vault unless the head is fully flexed. Thus the importance in breech delivery of proper suprapubic pressure and the great danger to premature infants delivered by the breech is seen. Other causes of intracranial hemorrhages which are more or less in dispute and are not so easily proven are: sudden changes of pressure to which the fetal skull is subjected, suction action, and a hemorrhagic diathesis.

DISCUSSION OF VARIOUS DRUGS IN USE

Drugs may be a factor in causing the fetal deaths. *Morphin* is a widely used drug in labor, and while it is commonly used without regard to time and dosage, this cannot be indiscriminately done without danger. If morphin is given within three hours of the termination of labor, an occasional accident or death to the infant will result. The dose should not exceed one-sixth grain for a woman of 130 pounds. Morphin is a definite respiratory depressant, and it is a known fact that infants are commonly very susceptible to morphin. Further when morphin has been given during labor, the anesthetic at the end of the second stage must be used with the thought in mind of the depressing effect of morphin on the respiratory center.

Opinion regarding the now commonly used *Gwathmey rectal analgesia* is at wide variance. But where accurate check has been made of its routine use there is no doubt that it at least lengthens the labor. Hatcher of Cornell University, speaking of these drugs in general, says: "There is practically no scientific evidence that magnesium sulphate is synergistic with either morphin sulphate or ether as an anesthetic while there is ample evidence that it is synergistic with morphin and ether on the respiratory center and that numerous deaths have resulted from their combined use." He also says that: "A history of the use of morphin in childbirth would almost certainly show that, other things being equal, the danger to the child increases with the increase in the dose of morphin above a minimum, which is apparently one-sixth grain for the average-sized woman. Further, morphin in all doses except the smallest, as well as ether, tends to retard labor, and anything that retards labor may be of danger to the child."

Some cases have been reported from Germany where after the use of the oil-ether enema, ether was exhaled by the infants, and autopsy has shown severe irritation of the respiratory tract.

Magnesium sulphate alone in large doses produces a respiratory paralysis, and in small doses may do likewise if any idiosyncrasy exists. In spite of these objections "Gwathmey" is a valuable analgesic, but should be used in selected cases. Other drugs are being used to replace the morphin in this combination.

This paper is not dealing with anesthesias in labor, but it is evident that physicians routinely trying to relieve the pain of childbirth will at times do it at the risk of the child. However, we have knowledge of ways to relieve pain and suffering during labor, and we are duty bound to use this knowledge to lessen the shock, exhaustion and fear, incident to labor. These factors together with others are advantages that the present-day woman should have at her disposal and which, if used carefully, far outweigh the disadvantages of an occasional risk to the infant. In fact this risk may be practically eliminated by selecting the method for the individual case, and not using one method blindly or routinely. Obstetrical anesthesia is an art by itself, and requires just that to get the most out of it.

Pituitrin as a cause of fetal death and asphyxia in labor is condemned by practically all obstetricians before the third stage of labor, yet it is in almost routine use by the profession in general. It has long been demonstrated that pituitrin increases the length of the uterine contraction, with the production of a varying degree of uterine ischemia. One needs notice only that when the uterus normally contracts an intranatal asphyxiation is initiated, as evidenced by a slowing of the fetal heart rate, to know that when this interference is prolonged and intensified by the injection of pituitrin actual asphyxia may result. I say interference because it is probably primarily a placental circulatory asphyxia, and secondarily a cerebral congestion or anemia from pressure. Kraus in 1927 showed that on pregnant rabbits pituitrin after the eighteenth day caused the death of the fetus and that hemorrhages into the placenta were present. Thomas of Yale, discussing ischemia of the parturient uterus, remarks on the frequency of this condition following the use of both ergot and pituitrin when given in labor. It has been demonstrated at De Lee's Clinic that there is a typical "pituitrin" lesion shown at autopsy which is characterized by an intense congestion of the pia mater. Ehrenfest believes (and he quoted several others) that the mechanical trauma of the fetal head incident to pituitrin causes many fatal intracranial hemorrhages during birth.

ASPHYXIA

Asphyxia *per se* may be a primary cause of intranatal death when caused by cord obstruction, pituitrin or spontaneous tetanic contractions of the uterus, by producing a placental circulatory obstruction. Theoretically asphyxia is a contributory cause of hemorrhage because of the intranatal cerebral congestion it produces. But there is another cause of respiratory center depression with asphyxia which is due to direct cerebral pressure. In the presence of such pressure the blood supply to the center is greatly diminished and the normal chemical stimulation of the blood carbon dioxid is wanting. This, Henderson believes, is a very definite and frequent cause of asphyxia.

Prolonged delay at the outlet from rigid perineum or vulvar ring, or from manual retardation of the head, may cause death from traumatic brain pressure or by prolonging an existing cord pressure. These factors must be considered when the woman is under the influence of anesthesia or drugs at the end of the second stage and the normal physiological expulsive forces are interfered with.

Contributing to the death of these infants is the manner of resuscitation. Holding the infant upside down will increase cerebral congestion and may cause a hemorrhage from an already injured vessel. Swinging the infant, especially in the Schultz method, will more easily produce the same effect and may cause a hemorrhage if the infant's blood coagulation time is long. The birth has already subjected the infant to shock through sudden changes of pressure, atmospheric conditions, and temperature. To spank or pinch or immerse it in an extremely cold bath only tends to increase the existing shock. Yandall Henderson of Yale has recently called these therapeutic assaults practices carried over from the Dark Ages. The stimulation of the respiratory center is a chemical phenomenon depending on the amount of carbon dioxid in the blood. The child is asphyxiated, contrary to the old idea, because the blood carbon dioxid is decreased. Oxygen is not a respiratory stimulant, but is necessary to the production of carbon dioxid. According to many anesthetists, pure oxygen is a paralyzing agent to the center. Asphyxia lividae presents a good prognosis because carbon dioxid is yet present in the blood. The child is cyanotic. But when asphyxia pallidae is present both oxygen and carbon dioxid are greatly decreased, and although the heart may be beating, carbon dioxid cannot be formed because there is no oxygen to produce it. The proper treatment to combat this is to supply the physiological stimulant, carbon dioxid, preferably a mixture of carbon dioxid and oxygen—5 per cent and 95 per cent, respectively, under very gentle pressure (6 mm. Hg.). Such an apparatus simple in construction should be in the delivery room at all times. In emergency, mouth-to-mouth insufflation supplies the needed carbon dioxid to the infant's blood. The pressure is difficult to regulate, and it has the disadvantage of being liable to injure the delicate lining structure of the lung and cause shock, edema, or actual hemorrhage. When utilized this danger must be kept in mind. It is far inferior to an apparatus which will accurately measure pressure, and regulate the proportion of carbon dioxid and oxygen, to give proper stimulation to the respiratory center

Prematurity presents factors favoring intracranial injury. It has been shown that hard, closed skulls protect the fetal brain against birth injury, and that the soft, malleable skull of the premature infant favors molding with tension and tearing of the membranes Further, the undeveloped blood vessels of the premature infant are abnormally friable and subject to rupture. Thus

premature labor must be considered a serious accident of pregnancy. Version and delivery by the breech is especially to be avoided in prematurity. Hurry in delivery of the after-coming head is an error. Pulling on the body or neck increases the already cerebral congestion and tension on the falx and tentorium. Pressure from above must be gentle and for the purpose: first, of increasing and maintaining flexion, and, secondly, to make pressure. For these purposes the hand should correspond to the diameter of the head. Blind, forceful pressure may cause collapse from herniation of the medulla through the foramen magnum. Suprapubic pressure is a job for a specially trained intern or assistant.

Gentleness in handling, warmth, and a proper supply of carbon dioxid and oxygen are the basic requirements in the treatment of asphyxia in the newborn. And though use of respiratory stimulants is a distinct aid we all repeatedly use methods of treatment without questioning the merit of the procedures. We easily do things contrary to scientific facts we have learned in the fundamental sciences of physiology and pathology. The frequency of asphyxia in the newborn, being many times greater than from all other causes put together, makes the subject of real importance. Hospitals should equip delivery rooms with every scientific means to control it.

503 First National Bank Building.

DISCUSSION

LESLIE A. SMITH, M. D. (Ogden, Utah).—It was my privilege while working in the department of pathology at the Washington University Medical School to dissect a number of the heads of stillborn infants and of a few babies that had died shortly after birth.

At this time attention was being directed toward the matter of intracranial hemorrhage. All of these heads were opened by the Beneke method, which consisted in clipping away most of the parietal bones on either side, and the occipital bone from over the cerebellum. The brain substance was then scooped out, leaving the falx cerebri and tentorium cerebelli intact, supported by enough of the skull to hold them in position.

Many of these specimens contained tears that showed an extensive hemorrhage; others with multiple small tears showed none.

The hemorrhage was most profuse where the margins of the falx or of the tentorium were torn, as here the large sinus veins are found.

Often just the superior or the inferior lamella of the tentorium was torn, and in these, too, there would be much hemorrhage. Hemorrhage sometimes was seen between the lamella of the falx, causing it to become thickened, but with no bleeding into the intracranial cavity.

The hemorrhage, where present, was usually quite profuse and often completely covered both the hemispheres of the brain.

We paid little or no attention to the brain substance itself, as it was usually macerated in removing it. We therefore did not find cases of hemorrhage into the brain substance that are now being found.

In the dissected mounted head, one can see plainly the mechanism by which these tears are produced. An elevation of the vault or increase in the up and down or longitudinal diameter puts the falx and the tentorium margins on a tension that, carried to extreme, easily results in a tear.

It was not uncommon in the cases of those infants who had lived a short while, to find, in addition to an intracranial hemorrhage, that the lungs had been forcibly inflated (mouth insufflation), and showed extensive interstitial emphysema, which condition alone could have caused death had the intracranial hemorrhage not been enough.

EUGENE H. SMITH, M. D. (Ogden, Utah).—Doctor Ward has adequately covered a most timely and important subject. Scientific medicine cannot rest supine with these appalling figures of infant mortality confronting it. There are many angles to this subject. I will mention but one, which might be termed the pathological physiology of asphyxia. The newborn infant is practically a decerebrate animal. It lives as long as circulation and respiration continue. The extrinsic nerves of the heart, aside from the vagus, arise from the upper thoracic roots, pretty well out of the danger zone. Hence it is common to find that the heart continues to beat long after respiration ceases. The respiratory center is located in the lower portion of the medulla. Here it also is protected from injury as long as the structures above it maintain their integrity and its blood supply is adequate. The most important of these structures is the tentorial cerebelli, and Doctor Ward has indicated the great frequency with which this protecting bulwark is injured during birth. Injury to the tentorium may result in one or both of two serious conditions: hemorrhage from torn vessels into the posterior fossa, and pressure with herniation of the medulla into the foramen magnum. Either of these may lead to serious or fatal asphyxia.

From the standpoint of treatment, both of these conditions contraindicate the usual vigorous efforts of resuscitation. If asphyxia is due to pressure from hemorrhage alone, some relief may be accomplished by lumbar or cisterna puncture. If the function of the respiratory center is depressed from anemia, lowering of the head, the application of a firm abdominal binder, and pressure upon the carotids with the object of shunting the blood through the vertebrals, which mainly supply the hind brain, are rational procedures.

ANESTHESIA FOR CRIPPLED CHILDREN *

By EMMA BUCKLEY, M. D.
San Francisco

THE Shriners' Hospital for Crippled Children was opened in 1923 with fifty bed patients, and with a long waiting list. With such a large waiting list it happens that a few, from having long waited their turn or from readmittance for a second operation, attain the age of fifteen, sixteen, or even seventeen years, before the final operation is done. The great majority of patients were between two and ten years.

STATISTICS

In the nearly five years of the hospital's work, 550 new patients and 130 former patients were admitted, making nearly a thirteen-time turnover of patients, and a daily count of fifty-nine or sixty patients, each on the average remaining in the institution from three to six months. The outpatient clinic each Thursday gives examinations, x-ray, manipulations, dressings, casts, braces, and other treatment to from thirty to sixty patients.

CHOICE OF ANESTHETIC

For operations on these children, nitrous oxid and oxygen is always used for induction, and used throughout for delicate or weakened children or where short anesthesia only is needed, as in osteoclasis, overcoming ankylosis, draining abscesses, removal or adjustment of extension pins. For the ordinary well and strong child, ether alone, or ether-oxygen is the anesthetic employed. Local

* Read before the Anesthesiology Section of the California Medical Association at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

anesthesia is seldom employed, except for slight operations such as on the eye or teeth.

With no admittance restrictions as to race, religion, church or social position, and having only the qualifications of indigence and need, one can see that loving care and psychical understanding are factors to be reckoned with and emphasized in the work of physical rehabilitation of these children. The great majority of these patients are in ordinary health when they come to operation, having been in isolation for two weeks or more, and having had twenty-four hours external preparation. From thirty to forty minutes before operation is begun, a small dose of atropin, grains 1/300 to 1/200, is given by mouth to children under five years, and morphin, grains 1/16 to 1/12, with atropin, grains 1/300 to 1/200, by hypodermic for those older. This makes possible a very light ether anesthesia. In closed cases where manipulation and frequent change of position is necessary, ether is most efficient. It is seldom that only one operation is done during one anesthetic. More often there are two and sometimes three or four.

Many operations are necessarily long and tedious, and after operation comes the application of the cast and its molding: but the patient can be held lightly with ether, so that at the end of one and one-half or two hours he awakes in his warm bed, usually without nausea sequence. The long sleep following the first awakening after ether if prolonged, even though light, is very beneficial especially to the child encumbered with a heavy cast.

Breathing exercises are given all children by the physiotherapist. This improves chest capacity, and its good result is noticed in Hibbs's and Albee's operations where the prone position lessens chest expansion, even though rolled towels are placed under armpits to relieve pressure on the chest.

The long serious operations, such as open hip reductions, lengthening of limbs, Hibbs's operations, Albee's operations, are the ones in which shock is feared and are also those which are usually followed by postoperative illness. We give in all cases of this kind a hyperdermoclysis of salt solution during operation to make up for waste of blood or loss of strength; also extra warming of bed by means of electric heater under bed, comfortable position, darkened room, and quiet. Of course the surgeons work as quickly as possible. In all cases the bed is brought to the operating room, but in the more severe cases even greater precaution is taken for heat and comfort.

For all cases—long, short, severe or mild—great care is taken to prevent air of low temperature from striking the body. When the relaxed skin of the patient is struck by a cooler air the functional processes are reversed; the poisons instead of being excreted are lodged or turned back into veins and lymphatics. All excretions are stopped for the time, giving rise to weariness of body, dullness of mind, headache and nausea. These symptoms are all intensified in deep ether anesthesia, ether getting the blame usually.

With a nervous or hysterical patient there is apt to be nausea and lassitude following any or no anesthetic. These Shriners' hospital children patients are the same as any others, and hysterical and fearful patients are found in the same proportions. By waiting till the subconscious mind is fully under control before the operation is begun, one may sometimes get through without postoperative nausea. Any odor is dreaded. The only salvation is rapid, gentle surgery that mind and body may readjust as quickly as possible.

In this last respect there has lately been a great change for the better, especially in gentleness of touch. Surgeons know that better after-results are obtained if patients are not sodden with anesthetic.

Now that the specialty of anesthesia is recognized, the anesthetist has it in his power more than ever before to do his work in a more independent manner, and to safeguard his patient in all respects.

At the Shriners' hospital the majority of patients are conscious ten minutes after cessation of anesthetic. In much orthopedic work the anesthetic must be continued for the making and molding of the cast. Where no cast is applied the eyes have opened and child gone back to sleep again, when his bed is ready to take back to the ward.

PREOPERATIVE CARE

The going to surgery is prepared for and looked forward to as a great excursion. Chief nurses are always at hand with deep interest in this particular operation to encourage, console, hold hands and prophesy a fine outcome and a speedy return to homefolks. A few children grow to like hospital life, especially at Christmas time, when stories are rife of wonderful entertainments and presents.

On entering the hospital, in addition to the usual history taking and examination, the family and environment are considered. X-rays, photographs and movies are taken. The photographs and x-rays are for surgeons to study. The movies are for both surgeons and Shriners. For at discharge another series of photographs and movies is taken to show the results obtained by the stay in the hospital.

There is always improvement, and often most remarkable changes for the better, noticeable even to the casual observer. Many times only surgeons and nurses can fully appreciate what has been accomplished.

But many a child has learned to walk; many a one coming with crutches has returned home walking securely without assistance. Many a knock-kneed or bow-legged child with club feet has had his limbs straightened and his feet turned so that he could put them firmly on the ground and look the world in the face.

Many a child has learned to read or been helped toward development of some special talent he pos-

sessed. Many a little girl has taken home with her the products of hands and needle accumulated while waiting for feet to be straightened.

Diphtheria, measles and sore throat epidemics have occurred, though the disease of "isolation" is to them the commonest and one most in vogue.

In a series of 1283 anesthetics—230 purely gas and oxygen, sixty-five ether-oxygen, and the remainder ether, about one-fourth of which were helped out with gas and oxygen, or oxygen, as seemed best without special record being made of it.

There have been four postoperative deaths—two from shock and two from embolus. The other two hospital deaths were from tuberculous meningitis.

There has been very little postoperative nausea or illness, due, I believe, to operative and postoperative care.

The average number of anesthetics per child is two, but a few have had only one; one patient had eighteen; another thirteen; two others nine each, and many have had five before final discharge.

2111 Hyde Street.

THE LURE OF MEDICAL HISTORY

WILLIAM HARVEY*

PART II

De Motu Cordis

By FRANK H. RODIN, M. D.
San Francisco

THE TEACHING OF THE ACTION OF THE HEART BEFORE HARVEY

FOR fourteen hundred years Galen's teaching of the action of the heart was the accepted doctrine. Galen (131-201) demonstrated that the arteries contain blood. According to him the liver was the center of the vascular system. The blood ebbed and flowed in both arteries and veins. There was no connection between the arteries and the veins, but there were invisible pores in the septum of the heart through which the blood was supposed to pass from the right to the left side. The first observer to seriously upset Galen's theory was Vesalius (1514-1564), who stated that he could find no pores in the septum. Fabricius ab Aquapendente, Harvey's teacher, in his *Venarum Ostiolis* (1603), claimed that the purpose of the valves of the veins was to prevent the downward flow of the blood to the hands and the feet. It is possible that this book greatly influenced Harvey in his work on the vascular system.

De Motu Cordis

In the year 1628 there was published at Frankfurt-on-the-Main, then a center of learning, a small quarto volume of less than one hundred pages and published by William Fitzer. It was dedicated to Charles I, and written in Latin. The title page read: "An Anatomical Treatise on the


EXERCITATIO
ANATOMICA DE
MOTV CORDIS ET SAN-
GVINIS IN ANIMALI-
BVS,
GVILIELMI HARVEI ANGLI,
Medici Regii, & Profeſſoris Anatomiæ in Col-
legio Medicorum Londinenſi
FRANCOFURTI,
Sumptibus GVILIELMI FITZERI.
ANNO M. DC. XXVIII.

Fig. 2.—Title page of the first edition of Harvey's "De Motu Cordis," published at Frankfurt-on-the-Main, 1628.

Movement of the Heart and Blood in Animals, by William Harvey, the Englishman, Physician to the King and Professor of Anatomy in the London College of Physicians." Harvey in his preface stated that the theories that he is presenting had been the work of more than nine years. ". . . I do not profess to learn and teach Anatomy from axioms of Philosophers, but from Dissections and from the fabrick of Nature." Here we have the keynote of his teaching, the beginning of the scientific and experimental attitude in medicine. He stated that the arteries and veins contain nothing but blood, and not only that, but the same kind of blood is contained in both kinds of vessels. He made the important observation that the arteries dilate. "But I believe I can easily demonstrate, and have heretofore demonstrated, that the arteries are distended, because they are fill'd like Satchells or baggs, not because they are blown up like bladders." Observing the motions of the heart he was as greatly perplexed as many an observer today, when he said: "I straightwayes found it a thing hard to be attained, and full of difficulty, so with Fracastorius I did almost believe, that the motion of the Heart was known to God alone: For neither could I rightly distinguish, which way Diastole and Systole came to be, nor when nor where the dilatation and constriction had its existence." Harvey then proceeded to state his explanation of the action of the heart, which is fundamentally what is accepted today.

He summarized his views in the chapter on the conclusion of the demonstration of the circu-

* This is the second of two papers on William Harvey. The first paper was printed in this journal in last month's issue.

lation of the blood: "Now then in the last place we may bring our opinion, concerning the circulation of the blood, and propound it to all men.

"Seeing it is confirm'd by reasons and ocular experiments, that the blood does pass through the lungs and heart by the pulse of the ventricles, and is driven in and sent into the whole body, and does creep into the veins and porosities of the flesh, and through them returns from the little veins into the greater, from the circumference to the centre, from whence it comes at last into the *vena cava*, and into the ear of the heart in so great abundance, with so great flux and reflux, from hence through the arteries thither, from thence through the veins hither back again, so that it cannot be furnished by those things which we do take in, and in a far greater abundance than is competent for nourishment: It must be of necessity concluded that the blood is driven into a round by a circular motion in creatures, and that it moves perpetually; and hence does arise the action and function of the heart, which by pulsation it performs; and lastly, that the motion and pulsation of the heart is the only cause."

Harvey's theory lacked complete confirmation. He did not show how the blood was transmitted from the arteries to the veins nor was it possible for him actually to have demonstrated this. The microscope was not yet invented. It remained for Malpighi, four years after Harvey's death, aided by the microscope, to see the blood in the lung of a frog in minute arteries passing into minute veins. It remained for the famous Dutch microscopist, Antone van Leeuwenhoek in 1688, to confirm this observation and confirm Harvey's doctrine.

Harvey's work was not translated into English till 1653. This edition was reprinted in 1673, but was never published again till the Nonesuch Press issued an edition based on the first English text of 1653, on the occasion of the tercentenary celebration.[1]

Harvey's work is a model of lucidity, cogent argument, and scholarly restraint. The work is that of a man who had taken his time, had proven his point, and when he spoke, he spoke with the air of finality. It is the work of a man who was sure of his logic, giving the result of painstaking observation. The book is richly illustrated by quotations from ancient and contemporary writers. Because of such principles Harvey proved his points so far as it was possible in his day to prove them.

HARVEY'S LATER YEARS

Harvey in the meantime became closely connected with the court and was a heavy contributor to the Royalist cause. He was appointed physician in ordinary to Charles I in 1639. He followed the king in war and during the civil wars, in 1642, went with the king to Nottingham and assisted the wounded at the battle of Edgehill. In the same year he settled at Oxford, where he was made a Doctor of Physic. Four years later he returned to London and retired to private life. In the last years of his life he suffered greatly from gout. In 1652 Harvey, who was at that time considered the greatest anatomist and physiologist in the world, was elected president of the Royal College of Physicians. This he refused to accept because he felt old and was in feeble health. He died five years later at the age of eighty years. The cause of his death was probably hemorrhage in the brain. He was buried at Hempstead in Essex.

His eulogy has been best expressed by Sir Charles Sherrington, who spoke at Harvey's tercentenary celebration and who concluded with the following: "The work of Harvey, the spirit of it no less than the import of it, provides his eulogy and makes superfluous all other. His great discovery, aside from its intellectual worth, secured an item of knowledge than which no other single item has so served to grow, as from a seed, medicine as we now know it. And it was the reassertion, the rebirth, of the method of experiment which, wedded to observation, had created the medicine — and the surgery — of the civilized world today. To engender medicine anew is to engender a whole world of correlated knowledge; and an attendant world of beneficence no less. The circulation of the blood, the meaning of the heart, the light of a victorious method! May we not affirm that modern medicine does in fact start there? Harvey, founder of modern medicine! He would himself have felt no term can carry richer or lovelier praise from a grateful world."

490 Post Street.

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CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

THERMOGENESIS BY RADIO FREQUENCY CURRENTS

By ALBERT SOILAND, M. D.
AND
A. H. WARNER, PH. D.
Los Angeles

THAT heat will destroy cancer cells, has been known for many years. Heat, such as that supplied by the actual cautery or by surgical diathermy, is of great value in localized and in more or less limited areas of cancer invasion, but unfortunately we have not, up to the present time, been able to deliver a general killing heat to a massive carcinomatous lesion without the greatest danger to the life of the host.

All heat so far employed, whether for the alleviation of pain or for the destruction of tissues, depends upon heat distribution through external application or through application to the cavities of the body. The only exception to this method of heat production is the fever heat such as is produced by inoculation of various proteins

and toxins. A new method of generating heat by means of radio frequency currents is here presented.

EFFECTS OF HEAT ON TUMOR AND CANCER CELLS

In January of the present year Dr. O. N. Meland of our group became interested in the experimentations reported by Mendel and Walinski,[1] and their account of the effects of heat and hot packs on tumor and cancer cells. Later it was learned that J. W. Schereschewsky,[2 3] surgeon in the United States Public Health Service, had described apparatus and methods employed in determining the effects of high frequency electric fields on mice and upon sarcomata in mice. A news letter of March 2, 1928, in the *General Electric Review,* mentioned the heating effects of similar frequencies on the operating personnel of a very powerful generating set. Doctor Meland drew our attention to the new problems involved in this investigation, and a consultation between Doctors Costolow, Meland, A. H. Warner, Ph. D., of the California Institute of Technology and the University of California at Los Angeles, Mr. Gilbert Wright, an experienced amateur radio operator, and myself, was held and the subject thoroughly discussed. We determined upon the construction of an apparatus designed to deliver heat by the use of radio frequency currents in an attempt to influence malignant growths. Such an instrument was constructed and is described as follows by Mr. Wright and Doctor Warner.

DESCRIPTION OF THE APPARATUS

"The apparatus is a vacuum tube oscillator producing an alternating current having a frequency which may be varied from thirty to one hundred million cycles per second. By electromagnetic induction a similar current is produced in a secondary circuit which has no metallic connection with the vacuum tube circuit. In this secondary circuit is a condenser, consisting of two insulated rectangles of copper foil which are used as applicators to the patient's body, a meter for measuring the current, and a small variable condenser for adjusting the value of the current.

"An electrical condenser consists of two metallic or conducting plates separated by a nonconductor or insulator. When an electrical pressure is applied to the conducting plates of the condenser, the positive and negative charges of the insulator move slightly, but are held as if by springs, and consequently come to rest, ready to spring back if the pressure is released. This is the situation throughout the entire insulator. Some of the energy involved appears as heat when the pressure is applied or released, and is known as the 'dielectric loss.' If the insulator is quite poor or 'leaky,' some of the electrons or ions may move through it, and 'Joule heat' also appears. Heat is consequently generated throughout the tissues included between the two applicators used, although no direct metallic contact is made to the body. The amount of heat can be regulated by adjusting the current in the secondary circuit and by using applicators of different sizes."

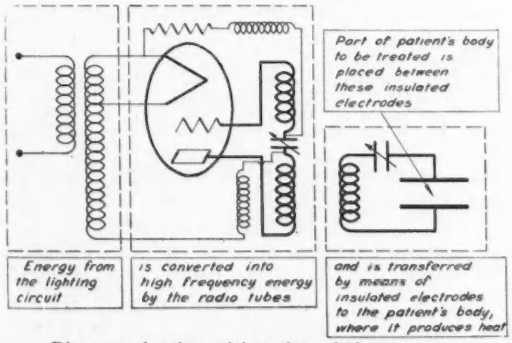

Diagram showing wiring plan of the apparatus

OBSERVATIONS IN USING THE APPARATUS

Our clinic at that time had under observation and treatment a young man with a metastatic melanotic sarcoma involving the scalp and neck. This was a condition for which an extensive operation and massive radiation had resulted in failure. Treatment with radio frequency waves directed to the diseased tissues of the patient was commenced, and the immediate effect was relief from pain and tension; there was also a profuse diaphoresis followed by periods of restful sleep. The treatment was given on intermittent days and continued over a period of three weeks, during which time the clinical effects were closely watched. The necrotic areas on the surface sloughed off; otherwise no other pertinent change was noted. The patient died subsequently from pulmonary edema due to internal metastases.

About this time a patient in the hospital suffering from an acute arthritis, who had been only partially relieved by the routine treatment for such conditions, willingly submitted to the "radio frequency test." The joints of the hands were swollen and tender, and motion was limited in both upper extremities. He had been in the hospital for thirty days and there appeared no immediate prospect of a recovery. He was given daily applications of the radio frequency current, each treatment being followed by a free diaphoresis, relief from pain, and sound sleep. The patient left the hospital after two weeks and returned to work.

We are making careful clinical observations with this apparatus to determine whether it is a new therapeutic agent which will merit further research, with the hope that it may have a future bearing on the cancer problem. Routine examinations of urine and blood, taken before and after treatment, fail to show any significant changes. Temperature readings show a general rise of .2 to 1.2 degrees Fahrenheit. A feeling of languor comes over the patient and sleep is induced even while the patient is under treatment. Judging from our observations, we believe that something more than actual heat accompanies the induction of these frequencies into the human body. Just what these phenomena are we are not yet in a position to say. It would seem from reasoning along physical lines that it is impossible to expect anything but heat from the wave lengths employed, but a biologic reaction is apparently engendered in the tissues. This is either a mechanical or chemical problem which demands further investi-

gation and study. If it can be shown that a certain lesion will respond to or become profoundly affected by, a vibratory electrical impulse of a characteristic frequency, then it would not be beyond the power of imagination to feel that a new line of investigation covering this theory may well be conducted.

The present experimental equipment seems unable to cope successfully with human cancer. Nor can the methods heretofore employed in animal experiments be converted to clinical attainments on human beings. Nevertheless, through this or improved apparatus it may be possible to discover human reactions and human cell tolerance to radio frequency currents of this type by a carefully conducted series of clinical tests. This is our immediate problem.

CONCLUSIONS

We have observed that pain of various intensities is quickly modified and frequently relieved, and that this relief is in certain instances more pronounced than with any other mechanical or electrical device with which we are familiar.

We have observed in patients with arthritis deformans, and with acute arthritis, that joint pains are lessened, and that motility in the affected joints is gradually improved.

We have observed in some cancer cases that the pain which would not yield to the hot-water bottle or to dry heat, would be relieved more readily by the radio frequency currents.

1407 South Hope Street.

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TUBERCULOUS APPENDIX

PERFORATION BY GRASS STALK

CASE REPORT

By JOHN MARTIN ASKEY, M. D.
Los Angeles

G. K., a Greek, male, age twenty-seven, had been in good health until May, 1928. Following the usual evening meal he had a sudden pain in his lower right abdominal quadrant; was slightly nauseated but did not vomit. The pain was not severe enough for him to call a doctor, but persisted until three days later when he saw his doctor, who diagnosed it as appendicitis. The pain continued with aggravation by food. He curtailed his food so much his weight dropped sixteen pounds in two months. He was constantly conscious of a "heavy" aching feeling and noticed soreness on pressure over the lower right quadrant.

On July 24, when first seen by Dr. Thomas C. Myers, the salient finding was a firm, somewhat nodular mass about two inches long and an inch wide, slightly tender, an inch above McBurney's point. The mass could be rolled easily between the fingers, was hard, and gave the impression of a conglomerate mass of lymph nodes. There were no glands in the neck, axilla, or groin. There were no positive findings in the heart or lungs. The temperature was 99, pulse 84. The blood showed 9000 white cells with a normal differential count. Urinalysis was normal.

X-ray plates revealed a shadow of calcification to the right of the fourth lumbar vertebrae not apparently that of the mass. A gastro-intestinal x-ray study did not visualize the appendix, but the mass seemed outside the intestinal tract. Cystoscopy failed to show any abnormality of the bladder mucosa. An opaque catheter was inserted in the right ureter and a pyelogram taken, which showed a normal kidney pelvis and the calcification shadow outside the ureter.

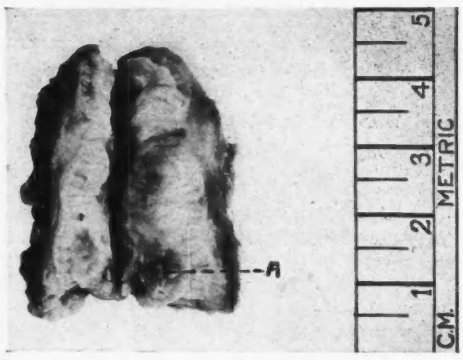

Fig. 1.—Section through appendix. A—Grass stalk in perforation.

Under ether anesthesia a laparotomy was done by Doctor Myers. The tentative diagnosis was appendiceal abscess. An adherent mass, buried beneath the cecum, with great difficulty was separated and identified as a markedly swollen appendix with a tiny point of perforation near the base through which protruded a grass stalk one and one-half centimeters long. The swelling formed a globose mass at the distal end of the appendix narrowing down to a normal width at the base. The cecum was uninvolved. The intestinal serosa was smooth, there were no other pathologic findings of the abdominal organs. The calcified area seen on the plates was not identified. The postoperative course was uneventful and the patient left the hospital in two weeks.

Dr. E. M. Hall's pathologic report was as follows: "The specimen consists of a greatly thickened appendix, 5 centimeters long by 2 to 2½ centimeters thick. The lumen is completely obliterated by granulation and lymphoid tissue. Near the base there is a ragged perforation 3 millimeters in diameter in which a grass stem 1½ centimeter long is found. Sections show marked fibrous thickening of the subserosa with many areas of dense round-cell infiltration in this layer and the muscularis. The lumen is filled up with lymphoid tissues in which a number of cellular tubercles occur composed of epitheloid cells with an occasional large giant cell of the Langhans type. Diagnosis: tuberculosis; chronic appendix; foreign body in appendix (grass stalk)."

A section of the foreign body showed the polygonal cell structure of a vegetable fiber.

COMMENT

Tuberculosis of the appendix associated with no demonstrable pulmonary involvement is a rare condition. A coincident perforation by a foreign body is extremely rare. Primary appendiceal tuberculosis of the hyperplastic type supposedly does not occur, but this case showed no other tuberculous evidence in the abdomen, and the normal postoperative course after ether anesthesia argues against any latent pulmonary focus. The x-ray shadow possibly was due to a calcified lymph node, but no abdominal adenopathy was found. Foreign bodies in the appendix usually are of metallic nature. Pins, needles, screws, buckshot, etc., are the commonest offenders. The priority of the tuberculous lesion to the lodgment of the grass stalk is most probable; that the perforation gave rise to an exacerbation of symptoms, however, is not illogical.

1501 South Figueroa Street.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

EPILEPSY

Thomas J. Orbison, Los Angeles.—"There is no such disease as epilepsy." This assertion was made by a physician on the witness stand in a Los Angeles court at a recent medico-legal trial, and it was received with incredulous surprise by the court and the lawyers as well as by the spectators and jury.

In his address to the members of the state medical society at Sacramento Dr. S. A. K. Wilson of England voiced the same thought, putting it in slightly altered form. Ten years ago anyone making any such dogmatic assertion would have been looked upon as slightly "off."

Today one may state, with the authority of most neuropsychiatrists whose work includes analyses of cases of epilepsy in large numbers, that epilepsy is not a disease. This is more nearly true than to say "there is no such disease as epilepsy."

To say "there is no such thing as epilepsy" is much too radical an elimination of a long known and recognized disease complex, characterized by convulsive attacks with unconsciousness or equivalents. The attempt is being made more and more to get rid of the emphasis that has always been given to the convulsions of epileptic patients. Convulsions *per se* are not the disease called epilepsy, but are a symptom of that disease complex. One may therefore say that the convulsive attacks, which have been diagnosed epilepsy, are in reality—and certainly to a much greater extent is this being determined as time goes on—the symptoms of irritation along the motor steps of the central nervous system. Thus it appears that what we call epilepsy is really not a disease, but a symptom complex in which many specific disease factors must be considered as etiological components.

One may set up typical epileptic attacks by irritating motor paths by an electric current. They appear in the Jacksonian type as the result of irritation by a foreign body—*e. g.,* tumor. They are known to result in the arteriosclerotic patient as the result of aneurysm or because of petechial hemorrhages. In paresis they come on as the result of toxic factors.

As a result of this attitude of finding the cause rather than of treating the effect (convulsion) many cases of "epilepsy" are cured following: (1) The removal of toxic foci, *e. g.,* dead teeth associated with apical abscess; toxic tonsils. (2) Exhibition of nonprotein shock in suitable cases, *e. g.,* as in the modern treatment of paresis. I would here cite two cases of "epilepsy" in children in whom congenital syphilis was demonstrated, both of whom ceased to have convulsions following nonprotein shock secured intravenously. (3) Removing local irritants from motor areas in the brain, *e. g.,* as in certain cases of "Jacksonian epilepsy." (4) Elimination of irritants from the body fluids by cleaning up the gastro-intestinal areas, *e. g.,* by corrective diet, etc. These are a few of the newer approaches in cases of "epilepsy."

Five years ago, with some temerity and a good deal of hesitation, I voiced my feeling upon this subject before the Neuropsychiatry Section of the American Medical Association. It was to the effect that in order to obtain a truer idea of the underlying factors in epilepsy there must be given us by research workers data having to do with the normal and abnormal sensitization of brain parenchyma; with biochemical factors within the body that affect the same; measures for desensitization or resensitization of pathological parenchyma, so that a normal sensitization may be induced. All these are most important, and as yet, though the idea has been widely voiced, we have not enough data to prove or disprove the theses stated. But, on the other hand, there is an accumulating mass of evidence that should soon be correlated so that it will give us more confidence in exhibiting certain definite specific therapeutic measures, rather than making a diagnosis of epilepsy and prescribing bromids or the like, as was too much the order of procedure some years ago. Though the name "epilepsy" may be unsatisfactory to the purist, nevertheless it probably will remain to designate those cases which are now so classed.

* * *

Lovell Langstroth, San Francisco.—In the past year three patients with epilepsy have been referred to me for medical treatment because careful neurological examination revealed no signs of structural disease. I treated them according to the plan of Doctor Walker of the Mayo Clinic by a so-called ketogenic diet. Its caloric value was 25 per cent higher than the basal requirements, its fat to carbohydrate ratio high enough to keep considerable amounts of acetone bodies in the urine. Its ten to fifteen grams of carbohydrate were derived from lettuce and fresh, cooked green vegetables. It was preceded by a preliminary period of several days of semifasting on fresh, cooked green vegetables alone. In two of the cases

the attacks were not modified either in degree or in number, though acetone was constantly present in the urine for several months. In the third the attacks stopped for a time, but this improvement may not have been permanent, as the attacks had appeared only at monthly intervals and the period of observation was short. This man had lived almost entirely on meat and cereals. The ketogenic diet was free from cereals and contained more fresh vegetables and lettuce than his former one. It therefore provided several new factors, viz., lowered calories, change in the mineral content toward the alkaline side—freedom from cereals and perhaps increase in vitamins as well as the acetone bodies from which it got its name. I cannot see why the benefit derived from it should be attributed to the acetone bodies alone. To summarize:

My experience with ketogenic diets in epilepsy is limited to three cases. One of these was apparently benefited. The improvement in this case cannot be attributed to acetone bodies alone because the ketogenic diet was in other respects a great improvement on the previous diet.

* * *

D. Schuyler Pulford, Woodland.—The latest noteworthy aid to the treatment of idiopathic epilepsy is the ketogenic diet. Credit for this diet is due largely to R. M. Wilder and M. G. Peterman, pioneers in the work.

The object of the diet is to produce a mild physiologic acidosis as evidenced by diacetic acid in the urine. This will occur when one eats five grams of fat to one gram of carbohydrate, each gram of protein being considered the equivalent of one-half gram of COH.

It matters little whether or not one uses a rigid formula in planning these ketogenic diets. The main thing is to hold the protein down to two-thirds of a gram per kilogram body weight in adults, and one gram per kilogram in children, supply adequate calories in fat and gradually cut out the carbohydrates until acetone bodies appear in the urine. Total calories should equal basal requirement plus 50 per cent

Clinically, in both old and young, it reduces the severity and number of convulsions and at times entirely banishes them. It has definite limitations, but patients, both children and adults, prefer to go on with it because of the improvement in their mental as well as physical well-being.

As an example, witness the further course of one of the cases reported by me to the California Medical Association in Oakland in 1926. It was necessary to institute a very rigid diet in the case of a little girl of ten, with a daily COH allowance as low as seven grams, over a period of six months. However, she was eventually free from both grand and petit mal attacks for nine months. In the past year it has been found that she has a COH tolerance of twenty grams, just like a diabetic, above which it is unsafe to go. This child's growth, development, blood pressure, and power to overcome infections has been normal, and both she and her family are satisfied to continue with this diet. Her mental condition is markedly improved.

I have three adult patients now under this diet treatment, so much relieved, if not cured, that they sing its praises. One other adult who took this diet for a year and a half has been free from convulsions for one year now, though on a moderately low COH diet during the past six months.

Another type of case worthy of mention is the person who has a definite organic basis for convulsions, as in one case recently operated upon by Doctor Naffziger. Preoperatively this girl of eighteen was markedly benefited by a ketogenic diet, though not cured. At operation the leptomeninges over the region of the precentral convolutions and adjoining sulci were thickened and milky in appearance, and in one or two places rather large cystic accumulations of fluid were present. Three months after the operation a convulsion returned. She can be made relatively comfortable again on a ketogenic diet. This case proves the diet of little use as a diagnostic procedure, as it reduced the number and severity of convulsions due to an organic cause.

Conclusions.—Neither the cause nor the treatment of so-called essential or idiopathic epilepsy is solved. Be it a neurosis, a functional disorder similar to insanity, or be it an allergic or a mineral or vitamin deficiency disease, nevertheless a ketogenic diet treatment should be offered every patient, be he old or young.

* * *

John J. van Paing, Santa Barbara.—The subject of epilepsy is so large and so generally misunderstood that a short discussion does not completely clarify the situation.

The classification of epilepsy cannot remain as it is at present if we are anxious to progress in the treatment of this symptom complex. We must first realize that Jacksonian convulsion is not epilepsy as it should be understood, but a symptom of organic brain disease, as tumor, scar, or an irritation that is purely local in its origin.

The classification of the definite attacks as grand mal and petit mal by the French authors should cover the subject epilepsy, and I sometimes think that petit mal should be eliminated from this classification. There would remain the grand mal attacks, consisting of tonic and clonic convulsions, rigidity, loss of consciousness, involuntaries and stupor following, and this convulsive manifestation should be the criterion by which we diagnose epilepsy.

We should eliminate entirely the so-called epileptoid seizures and convulsions other than those that come within the scope of grand mal. The seizures that we see wherein the patient has a series of convulsive attacks which terminate in the epileptic equivalents or epileptic psychoses

should not be classified as epilepsy, because the condition which terminates this class of cases is the same condition which was the etiological factor in the beginning.

The psychological factor is an important one, and some of the apparently miraculous cures have been brought about along this line of treatment. It is impossible for us to realize the conflict, the feeling of inferiority and the deeply hidden, primitive instincts operating to produce many cases of so-called epilepsy.

The work of Clark, Binswanger, Osnato, Pollock, and a host of other men has been important in many ways in that they show among other things the great amount of scientific research necessary to cover the great field of convulsive phenomena. But decerebrate rigidity or "spinal epilepsy" does not show us the cause any more than the ketogenic diet provides the cure. We must, first of all, have a new conception of the term "epilepsy," a new classification, a new standard, by which we can conceive the strict limitations of a symptom complex, so protean in its manifestations and so difficult to understand. A symptom complex or a disease that affects about three or four per thousand of our population is important enough to deserve a great deal more time and study than has been accorded epilepsy in the past.

We may find that cerebral inhibition, or rather the lack of it, is an important factor, but that is only a single step in the process and we must go beyond that.

The treatment of this complex will require much more than ketogenic diet or any type of food to solve the problem of alleviation or cure. The large number that have been treated by the ketogenic diet proves by the controls that it is a factor only and must not be used alone or we will be greatly disappointed. My personal experience with this diet has been that it decreases the frequency of convulsive attacks for a period of months, but not to such an extent that I have felt justified in continuing it. If this diet is tried on a large number of cases it will be found that at the end of a year the number of convulsions covering the whole group will be almost if not quite as frequent as those who have had the basic diet or the diet low in fat.

The emotional instability of this class of patients is proverbial and of course it still obtains because the primitive in man is of such a nature that he lives through a series of abridgements or compromises with and adjustments to his environment and his emotional reactions to life in that environment which in all probability induces a chemical reaction, and this type of chemical reaction which follows the environmental one would hardly be primary in operation and, therefore, to place a system of feeding or a type of food which would tend to neutralize this secondary intoxication or chemical reaction would be to put the cart before the horse in this particular phase of convulsive attack. Psychologically the epileptoid individual may be homosexual, sadistic and inferior as well as primitive in his sexual sphere, and some of our most atrocious murders and mutilations can be traced to this class of individuals while the convulsive phenomena are held in abeyance. We may look for this especially in those who are retarded and where they are not under custodial care. Much could be done by surgeons specializing in brain surgery in that class of cases showing symptoms of pressure scars, tumors, etc., and it should be the specialist's responsibility to see that these cases are placed in the proper hands.

The Story of the Christmas Seal.—Every year millions of Christmas seals are sold in this country to control and prevent tuberculosis. They have become a symbol of the great war that is being waged against an ancient, preventable disease. But in 1904 the Christmas seal originated in a small way to give a chance for health to a group of tuberculous children in a foreign country.

In that year a children's hospital was needed in Copenhagen, Denmark. A postal clerk in that city named Einar Holboell heard of this and conceived the idea that stamps, especially designed to decorate Christmas letters and packages, could be made to finance the cost of the building. His enthusiasm won for him the endorsement of the Danish royal family, and the first Christmas seal was designed and placed on sale in the post office. The good citizens of Denmark pnrchased enough of them to insure for the sick children the best medical and nursing care available.

A pioneer in the field of social service in America received a letter from his mother country bearing one of the bright-colored little stamps. His name was Jacob Riis, and his curiosity aroused by this new decoration, he inquired about its purpose. The possibilities of its use in the United States impressed him. He wrote an article that was published in the *Outlook* in which he described what the stamp had achieved in Denmark.

In that article, Miss Emily P. Bissell of Wilmington, Delaware, found the solution of her own problem, namely, how to raise $3000 for a tuberculosis pavilion in her state. She organized the first sale of Christmas seals in the United States and as a result the pavilion was built. In 1908 Miss Bissell was able to induce the authorities of the American Red Cross to undertake a nation-wide sale of tuberculosis Christmas stamps. Women's clubs, religious bodies, and local Red Cross chapters assisted in the campaign. From then on until 1920 the Red Cross conducted the sale of the seals.

From 1907 to 1910 the National Tuberculosis Association had been organizing its warfare against the disease with the support of foremost scientists, but with little funds. To strengthen the organization's work, the American Red Cross joined with it in the Christmas seal sale. The partnership lasted for ten years. Then, in 1920, it was dissolved because the American Red Cross desired to continue its annual roll call, begun in the years of the Great War, and it did not wish to appeal to the public for funds twice a year. Since that time only the double-barred cross, emblem of the tuberculosis movement, has appeared on Christmas seals.

Through the power of the Christmas seal, state after state was gradually organized to attack tuberculosis with a scientific program. The state organizations entered the larger cities and counties and formed local associations. Together, led by the national body, they have brought into existence nearly all of the present-day community machinery for combating tuberculosis.

The little stamps help to control the sources of infection especially to children, to educate everyone in health habits, and to prevent economic loss due to the death of producers. This year the National Tuberculosis Association and its affiliated organizations held the twenty-first sale of Christmas seals throughout the country.—*Helena L. Williams.*

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Editors . . . . . { GEORGE H. KRESS / EMMA W. POPE

Associate Editor for Nevada . . . HORACE J. BROWN

Associate Editor for Utah . . . . . J. U. GIESY

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EDITORIALS

MORE COMMENTS ON THE BOARD OF MEDICAL EXAMINERS AND THE PROPOSED "OCCUPATIONAL STANDARDS DEPARTMENT" OF CALIFORNIA

A New Name for the Proposed Composite Board.—In the December issue of this journal (page 414) were given some excerpts from a preliminary draft of a bill creating the proposed "Occupational Standards Department of California." In a later draft the name of the proposed department has moved up one step in dignity, for at this writing it seemingly is to be dubbed the "Vocational Standards Department," thus providing a compromise title between the licensing boards for "occupations" such as plumbers and the licensing boards for "professions," such as physicians; and which with the licensing boards for "vocations," such as the beauty specialists or cosmetologists, will create the composite or ensemble of licensure groups which are to be placed in this new department.

Mention was made of the fact that the chief of the department was to have the title of "director," and that this director—who might be a layman not coming under the domain of any of the occupational, vocational or professional boards listed in the proposed statute—was to be the executive officer of each of the dozen or more boards now existing and gathered together to form this new department. Since last month's draft was gotten out we are given to understand that the phraseology of some of the provisions has been further changed, by substituting the word "shall" in place of "may," so increasing the scope of authority conferred or duties imposed upon the department director.

* * *

Proposed Statute of Much and Special Interest to the Professions of Medicine, Dentistry, and Pharmacy.—So radical a departure from the methods of licensure and other functions of examining boards which for years have been in vogue for the professions of medicine, dentistry, and pharmacy, was bound to excite interest and study by members of these professions. In the southern end of the state, a series of conferences, which began in the fall of 1927, have been held by representatives of these three professions, with the object in mind that by exchange of opinion on the merits and demerits of provisions in the proposed statute, it might be possible to come to a joint conclusion on desirable modifications. In that way, it was hoped that the joint views of the three professions upon the principles and procedures involved might be presented to those state officials who were sponsoring the proposed measure. The results of these informal deliberations in the South were transmitted to northern colleagues in the three professions, who were likewise making a study of the problem.

Out of this exchange of opinions between members of the professions of medicine, dentistry, and pharmacy in different portions of California, certain conclusions have been gradually reached. Some of the opinions now held and which are here given as the informal, unofficial viewpoints of the colleagues who have been giving special attention to a study of the various issues, may be worthy of being placed in printed form, since they may have a suggestive value for all who are interested in the further consideration of the important principles and issues involved.

* * *

On What Grounds Could a Composite Board Control Be Legitimately Contended to Be Preferable to Separate Boards for the Professions of Medicine, Dentistry, and Pharmacy?—There are only two legitimate reasons which would seemingly justify taking away the independent existence, authority and responsibilities of the state examining boards of these professions, and changing the system of such independent entity, as is now existent in nearly all states of the Union, to a method which still must be acknowledged to be somewhat of an experiment.

These two reasons, which might justify such experimentation, could be stated to be: one, that through such composite board supervision greater efficiency could be secured for each of the boards in the proposed department, so that thereby greater and more efficient service might be rendered to the citizens of the state; and two, that because of such consolidation under one depart-

ment head, a money saving, especially of money raised by taxes from citizens at large, might be brought about.

Let us take up each of these two grounds, and consider to what extent, betterment could be attained along either or both lines.

* * *

Why Increased Efficiency in Licensure Board Functions Would Not Be Attained.—It must be conceded by all who have any knowledge of the educational, ethical and professional standards of the professions of medicine, dentistry, and pharmacy, that in the matter of the purely licensure work of their respective examining boards a lay director of a Department of Vocational Standards could be of practically no service that would make for increased efficiency.

Let us first consider licensure work proper. What knowledge or advice of value could such a lay department director bring, in such work as drawing up the examination questions, or in grading verbal or written answers for any one of these professions? The answer must necessarily be, that such a director not having skilled knowledge of these professions could necessarily have no opinions of value in such matters.

The same could be said of any lay or other department deputies, since it is inconceivable that learned professions having to do with the health and lives of citizens would permit intervention of any kind by paid departmental employees in the sacred work of safeguarding professional standards. For the standards of training and practice and the ethics of these professions are set by the members of such professions as a whole; and the representatives and leaders of those professions, and not deputy board employees, should speak for them.

Let us next take up that function of a licensing board which obligates it to prevent persons who are incompetent, or who have no legal right to practice, from so doing. In this function we have the basic reason for the existence of licensure boards, which is none other than the obligation of the state to protect its citizens from incompetent or vicious persons, who would practice occupations, vocations or professions, which in themselves have a somewhat intimate relationship to the health, lives or material interests associated therewith, of other citizens. It is on this ground that each state in the Union, in the exercise of the police powers granted by the Constitution of the United States, is at liberty to bring into being legislation that provides for certain licensing boards.

So that in carrying out this function of protection in the name of the state, the California examining boards in medicine, dentistry, and pharmacy are called upon not only to decide upon the eligibility of persons to practice in their respective professions, but they are obligated also to ferret out and prosecute all persons professing before other citizens to have a legal right and sanction to practice medicine, dentistry, and pharmacy, when such legal right and sanction do not exist.

Here again, the question arises as to whether a departmental chief or deputies reporting through him are as well or better qualified to pass on police and prosecution matters of this kind, and to carry out the executive actions in connection therewith, than would be the well-known members composing the three examining boards in question or the deputies whom at present, those boards themselves directly employ, subject to the general state laws covering such employment, and which deputies are made to report directly to these boards, instead of through a department chief, whom they would be more than apt to look upon as the source of real or final authority. What would be the results that could be expected from such a lay executive officer set-up?

So that it may be stated that the conclusions thus far reached by the colleagues who have been studying this proposed new department are that such a system as is therein provided would tend to break down rather than build up proper inspection and prosecution work of the boards, and that the interests of the three professions and of the citizens whom, through the licensing boards their members serve, would all suffer.

* * *

Why No Saving of Money, and Especially No Saving of Money From Taxpayer Sources, Would be Attained Through Such a Department.—For the last several years each of the licensure boards of California has been working under a budget, determined by the State Board of Control and the director of finance; no licensure board, no matter how great the amount of money in its reserve fund accumulated from licensure and other fees, being permitted to spend in excess of this budget which is each year provided.

But over and above that is this further important fact, that the moneys in these reserve funds of the California licensing boards in medicine, dentistry, and pharmacy have not come from taxpayer sources, but from the members of the professions involved.

In other words, these licensing boards in medicine, dentistry, and pharmacy are, and practically always have been, virtually self-supporting.

It is we, ourselves, who give this money to the state, on the supposition that it will be used to maintain the educational and practice standards of our respective professions, so that through such maintenance and elevation of professional standards, the physicians, dentists, and pharmacists of California may be able to give more efficient professional service to citizens, whose health or lives being in jeopardy, call upon members of these professions to give aid, in restoring and maintaining them as useful citizens of the commonwealth.

This fact, that in our professions we generously tax ourselves to protect the people from disease and injury, and to aid them more promptly to recover when they already suffer from disease and injury, and that we do this through main-

tenance of high professional standards, all at the expense, not of the citizens at large, but of ourselves, is a thought that we should not hesitate to emphasize before those who have only a superficial knowledge of our work.

* * *

An Interesting Discussion on the Issues Here Involved Which Is Printed in the Miscellany Section of This Issue of California and Western Medicine.—Illinois was the first of the states to inaugurate the system which has been here discussed. In one of the conferences in the South, one of the pharmaceutical colleagues brought the original manuscript and newspaper clippings bearing on the certificate scandal which developed not long after Illinois started its experiment. That paper, which was read in California some years ago, is so pregnant with important facts and suggestive thoughts that it is being printed in this issue.

Every member of the California Medical Association is urged to turn to the Miscellany section (page 65) of this issue of CALIFORNIA AND WESTERN MEDICINE and to scan the facts and arguments therein presented. To do less, would be akin to disloyalty to the professional standards and issues at stake.

* * *

Action by the Council of the California Medical Association and by the Associated Professions of Dentistry and Pharmacy.—The Council of the California Medical Association will meet on January 12, 1929, and at that time a decision will be reached on the attitude to be taken concerning this proposed department, so far as the profession of medicine and the California Medical Association are concerned.

In the meantime a liaison committee has been appointed for conference with representatives from the professions of dentistry and pharmacy, the joint committee to make a further study of the entire matter.

Members of the component county societies of the California Medical Association, on their own accounts and through their society officers, should give this proposed department immediate study and consideration; and through their district councilor, or direct to the secretary of the California Medical Association, should inform the Council, which meets on January 12, what are their views, so that the members of the Council may be better able to reflect the wishes of the California Medical Association in any decisions reached.

THE NEW YEAR—MEMBERSHIP; THE JOURNAL; GREETINGS

Membership Campaign.—Another twelve months have come and gone. During this period just elapsed the California Medical Association has continued in steady though not exceptional growth.

It may be proper again to call attention to the advantages which would accrue to the interests of organized medicine and of the California, Nevada, and Utah Medical Associations, if every component county medical society in these states would embark upon an intensive survey of nonmembers who possessed credentials making them eligible to membership. Newly elected officers will find an outline of membership campaign plans in previous issues of CALIFORNIA AND WESTERN MEDICINE (January, 1928, page 81; and May, 1927, page 665).

* * *

Increase in California and Western Medicine Advertising Rates.—It may be gratifying for members at large to know that the 50 per cent increase of advertising rates recommended last year goes into effect with this January issue, with practically no loss of advertisers, an indication that CALIFORNIA AND WESTERN MEDICINE has made for itself a place of some value in the opinions of firms who seek to call their products to the attention of members of the medical profession. In this connection members of the California, Nevada, and Utah Medical Associations are urged to mention this journal in all requests for literature or price schedules. A considerable number of advertisers keep a careful record of the source of such inquiries and place their volume advertising patronage accordingly. Advertisers appreciate inquiries for information. Such requests for information cost members only a small amount of effort and postage, but may mean much in aiding the California Medical Association to build up its reserve funds and activities.

* * *

Greetings.—At this time CALIFORNIA AND WESTERN MEDICINE wishes to avail itself of the privileges of the season, and to extend to every reader and patron its best wishes for a successful and happy year in 1929.

MEDICAL EDUCATION—VIEWPOINTS OF TWO CALIFORNIA DEANS

Medical Education Articles in This Issue.—Among the special articles which are printed in this January issue of CALIFORNIA AND WESTERN MEDICINE are two papers, one written by Langley Porter, M. D., of San Francisco, dean of the Medical School of the University of California, and the other written by Percy T. Magan, M. D., of Los Angeles, dean of the College of Medical Evangelists. These two institutions, with the Stanford School of Medicine, are the three Class A medical schools of California.

The Medical School of the University of California has a career which extends back to the year 1862, when Dr. H. H. Toland founded a school which in 1872 was taken over by the University of California.

The College of Medical Evangelists is comparatively young, having come into existence so recently as 1909, but in size of undergraduate student body is the largest of the three medical schools in California, being at the same time the seventeenth largest medical school in the United States as regards numbers of students. Its origin, founding, and career are quite unique, not only in their variance from the usual history of institutions of medical learning, but also in the high

places which its graduates have taken not only in California, but in the examinations of the National Board of Medical Examiners and of the British and Foreign Possessions Examination Board.

The viewpoints of these two California colleagues, who as the heads of their respective institutions have facilities for special observation and knowledge on factors concerned with the modern-day teaching of medicine, should be of interest to Pacific Slope practitioners.

LAY DOMINATION IN PUBLIC HEALTH WORK—THE SHEPPARD-TOWNER ACT EXAMPLE

Improper Attitude by Lay Executives in Medical Organizations and Institutions.—Devotion to the scientific phases of professional work rather than to administrative activities related thereto, is almost characteristic of most members of the medical profession. As a result, more efforts than one have been made in recent years by keenly alert lay helpers who have been employed in public health work, for instance, to assume increasing authority, until such lay control practically usurps the rights of medical men; producing almost a sort of overlordship to physicians in public health societies and in hospitals, and creating a condition of affairs that is far from being justified or desirable.

A number of these lay public health executives, who in days gone by were brought into the work as clerical helpers, seemingly go farther than this and engage in carrying on propaganda in which it is asserted that physicians have no executive capacity and should have no direct or majority control of the management of certain public health organizations and institutions. This assumption or presumption on the part of such salaried lay persons becomes the more astonishing when one remembers that most of such public health organizations and institutions, if they did not receive so much gratuitous service from members of the medical profession, would probably not even exist. Some of these lay executives seem to hold that physicians should continue to do the altruistic work, but according to regulations largely outlined by the lay executives; who, it may be stated in passing, in very many instances derived what knowledge they possess of public health organizations and institutions largely through contacts with physicians.

* * *

The Sheppard-Towner Act.—An excellent example of how lay control in public health matters may build itself into a bureaucracy is noted in the efforts of the proponents of a continuation of the child welfare extension service in the children's bureau in the United States Department of Labor. This extension work may be said to have come into existence with a number of other so-called humanitarian after-war measures. The *Journal American Medical Association* of December 1, 1928, page 1721, again very properly calls the attention of members of the medical profession to some of the provisions of a bill before Congress at this writing, and known as "H. R. 14070, A Bill to Provide a Child Welfare Extension Service, etc."

The work which was carried on under the Sheppard-Towner Act; by action of Congress at a previous session, must cease on June 30, 1929. That extension was practically granted upon the pleas of the officers of the bureau concerned, that its affairs could not be wound up until that time.

As an expression of their appreciation and good faith (!) in having received such extension, the proponents of the bureau come now with a new bill which would practically perpetuate the work and which would give the bureau even greater powers than those granted in the Sheppard-Towner Act, and which powers in the Sheppard-Towner Act were construed to be inimical to the best public health and medical profession interests.

A perusal of the article above referred to should convince all county medical societies and all state association members that every congressman and senator from the states of California, Nevada, and Utah should be made acquainted with the fact that such legislation as is proposed in "H. R. 14070, A Bill to Provide a Child Welfare Extension Service," etc., is opposed by the large majority of members of the medical profession who practice in those states.

Every member of the C. M. A., the N. M. A., and U. M. A., can be of service by dictating a brief note expressing this opposition and sending the same to the congressman of his district and to the two senators of his state. County medical societies, through their presidents or secretaries, could also materially aid by doing likewise.

School of Medicine for Colored People of America. The School of Medicine of the Howard University was established in 1867 as one of the departments of the university of that name. While intended primarily for the instruction of students of the negro race in medicine, its doors have always been open to all properly qualified students regardless of race, sex, or creed. It was the first school in the United States to admit women to the study of medicine upon an absolute equality with men. One of its early graduates was Dr. Mary Spackman of the class of 1872, who had a large and successful practice in Washington throughout her lifetime.

Howard University School of Medicine has graduated 1367 physicians who have settled in many portions of the United States, the British West Indies, and foreign countries, and who have been for the most part unusually successful. Their regard for loyalty to their school is testified to by the fact that more than fifty of them subscribed and paid $1000 each to the endowment fund of the school.

The new building was given by the Government and equipped by a gift from the General Education Board at a cost of $500,000. In addition to the College of Medicine there are also colleges of dentistry and of pharmacy.

The definite purpose of the school is the giving to the colored people of America well-trained physicians, dentists, and pharmacists, for all of whom there is a crying need, since the supply in these branches of the medical profession falls far short of the demand.—*Medical J. and Record.*

MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members.

Notice of Error.—On page 349 of the November issue, 15 grams of hexamethylin tetramin should read 15 grains, four times a day.

Neuropsychiatry

Migraine—A Vascular Neurosis.—Migraine is a vasomotor disturbance due to many different stimuli acting on the vegetative nervous system. Such is the view that has been held by writers on nervous diseases for many years. They have spoken of spasm of the cerebral arteries, hyperemia and anemia of the cerebral hemisphere and thrombosis of cerebral vessels as causes of migraine headache, in the absence of anatomical proof that the cerebral vessels are supplied by nerve fibers. Recently, however, experiments by Forbes and Wolff [1] have shown that the circulation of the brain is controlled in part by cerebral vasomotor nerves.

The prevalence of vegetative symptoms during migraine attacks is a common observation. The pallor, followed by flushing of the skin, profuse perspiration, vomiting, and diuresis, are frequent symptoms. In addition evidences of venous turgescence are supplied by throbbing sensations and distended temporal veins. That the arteries of the brain may be involved has been suggested by the discovery by some patients that pressure on the carotid artery will alleviate the throbbing headache. Patients with transient paralysis, paresthesias and anesthesias present most dramatically the picture of severe disturbance occurring within the brain that can be accounted for only on the assumption of temporary vascular changes.

Pierre Janet [2] cites cases of migraine occurring in the depressive phase following periods of excitement, and ascribes them to "disturbances of vasomotor equilibrium associated with relaxation of psychological tension which has been keyed up beyond the period which the subject can actually bear." The statement, "I cannot allow myself to become angry because I know I shall suffer an attack of migraine," is typical of a migrainous patient. The anxiety attendant upon the anticipation and delivery of a lecture resulted, in one man, in paroxysms accompanied by lividity of the face, scintillating scotoma, throbbing headache, and nausea. These facts support the view that a profound temporary change occurs in the vegetative nervous system which causes vascular alterations. Migrainous persons are hypertonic, irritable, easily worried, given to depression, and inclined to manifest other evidences of neurosis. No matter how varied the symptoms of migraine may be, the personality type is usually the same. It may not be going too far to contend, as does one observer, that most neuroses depend upon circulatory disturbances and may be reasonably termed vasomotor neuroses.

Forbes and Wolff have developed a technique for observing and measuring changes in caliber of the cerebral arteries, with simultaneous measurements of cerebrospinal fluid pressure and intra- and extracranial vascular pressures. They have secured evidence that "the circulation of the brain is not regulated wholly from a distance by splanchnic or systemic vasomotor control," but that "constriction of (cerebral) arteries also follows direct application of epinephrin or stimulation of the cervical sympathetic nerves, whereas dilatation follows stimulation of the vagus." In a later experiment they show that "among the various factors which regulate cerebral blood supply one must include changes in osmotic tension of the blood." The point brought out by these experiments is that the vegetative apparatus exercises some control over the cerebral circulation. Pathologic evidence supports the vascular theory of migraine. There may be considerable increase in the number of blood vessels, and the walls of the small arteries may be thickened and degenerated. Attacks have become aggravated with the development of arteriosclerosis.

The effectiveness of small doses of luminal in some cases of migraine supports the vascular theory. Luminal is a circulatory depressant and causes collapse of the peripheral vessels. It is probably because of this action that the drug is effective in the neuroses in general.

RICHARD W. HARVEY, San Francisco.

REFERENCES

1. Forbes, Henry S., and Wolff, Harold G.: Arch. Neurol. and Psychiat., 1057-1086, June, 1928.
2. Janet, Pierre: Psychological Healing, 1925.

Radiology

The Therapeutic Value of Radiation in Carcinoma of the Breast.—Though the radical operation for carcinoma of the breast has long been standardized, the outcome following its use has not been uniformly successful. In order to improve the percentage of good results, various attempts have been made to combine radiation with operation.

The principles as laid down by Halstead, Willy, Meyer, and Handley have long been accepted as the correct surgical procedure, but the technique of radiation therapy has varied. Sometimes the radiation has been administered by the so-called low voltage x-ray; at other times by the high volt-

age x-ray. Frequently it has been given preoperatively, but most often postoperatively. Latterly, with the increased amounts of radium at hand, that element has been used with increasing success.

The most recent publication in this country is by Lee,[1] who gives his impressions gained from an analysis of 355 cases observed over five years at the Memorial Hospital.

Lee, in tables presented on primary operable breast cases, gave the following figures:

(*a*) Preoperative radiation plus surgery plus postoperative radiation: forty-one cases, or 39 per cent, showing five-year cures.

(*b*) Surgery plus postoperative radiation: seventy-six patients, or 35 per cent, showing five-year cures.

(c) Radiation alone: forty-five patients, or 36 per cent, showing five-year cures.

When Lee compares surgery alone, with surgery plus postoperative radiation, 35 per cent are well at five years with the combined treatment, while only 15 per cent are well with surgery alone, which he admits is lower than other surgical clinics report. In discussing radiation Lee feels very definitely that preoperative radiation is of great value. This is at variance with the opinion of many men who condemn it on theoretical grounds because it may make the operation more difficult and that it may interfere with healing. These are valid objections, but Lee overcomes them by letting a period of at least three or four weeks elapse after the last treatment before operation is undertaken. What the form of radiation is, whether x-ray or radium, Lee thinks does not matter so much, but he holds that radium in the form of a pack is more efficient than the x-ray.

Webster,[2] an English observer, recently presented his experience along similar lines and showed the definite value of radiation with surgery. Even Handley, who is one of the outstanding advocates of surgery, resorts to radiation. Besides the complete excision of the breast, he inserts a tube of radium, highly filtered, into each parasternal space to prevent mediastinal involvement, and at the end of four weeks, x-ray treatment is given. Under this regimen he has 85 per cent of his cases free from any evidence of the disease at the end of three years.

Keynes,[3] an English surgeon who is working with radium loaned by the government through the medical research council, has been using radium element in the form of needles. These are plunged around the breast and into the gland-bearing areas, where they are left as long as a week. From the short experience he has had he is of the opinion that the results compare favorably to those obtained by surgery.

It will take additional observation and time before agreement on the correct technique of radiologic treatment in breast carcinoma is reached, but the fact that radium therapy alone compares favorably to surgery in early cases, and that radiation with surgery gives better results than surgery alone, is indicative of what can be attained in the treatment of carcinoma in well-controlled institutions. At the recent International Conference on Cancer in London, Handley[4] stated that radium alone could destroy malignancy, but inasmuch as there was always the element of uncertainty in the extent of its action, he felt that surgery and radium should be used together in the same case to insure the patient the benefits of both methods of attack.

Saltzstein,[5] reviewing the carcinoma question in Detroit, gave the impression that radiation in conjunction with surgery in carcinoma of the breast is, at best, of doubtful value. Be this as it may, a careful perusal of his article seems to show that whatever surgery was done on breasts in that community was not always done according to the radical procedure. In other words, some of the surgeons were only doing partial excisions, leaving the unfinished work to the radiologist. Such a method is very apt to lead to poor results since the growing edge of the malignant process is too often incised in the incomplete operation, with the result that early recurrence and metastasis take place, bringing discredit to both surgery and to radiation therapy.

These recent articles are of interest since only one of the papers was written by a radiologist. In other words, it represents the opinion of surgeons who have been impressed by the results of radiation therapy as seen in institutions where a careful follow-up permits an unbiased opinion.

ORVILLE N. MELAND, Los Angeles.

REFERENCES

1. Lee: The Therapeutic Value of Irradiation in the Treatment of Mammary Carcinoma, Amer. Surg., July, 1928.

2. Webster: Radiology and Surgery in Carcinoma of Breast, Lancet, July 14, 1928.

3. Keynes: Radium Therapy in Primary Carcinoma of the Breast, Lancet, July 21, 1928.

4. Handley: Report on International Conference on Cancer, Lancet, July 14, 21, 1928.

5. Saltzstein: The Average Treatment of Cancer, J. A. M. A., August 18, 1928.

Syphilology

Bismarsen—An Addition in the Therapy of Syphilis.—Within the last year the new drug bismarsen has won for itself a place among the syphilologists' instruments of warfare. Clinically it is a compound of bismuth and arsphenamin, bismuth arsphenamin sulphonate. It is a yellowish powder, and is quickly soluble in water. Its toxicity is low—white rats tolerate 500 mg. per kilogram of body weight and its chemotherapeutic index is high, as the dose necessary to destroy the spirochetes in an initial lesion is only from 5 to 10 mg. per kilogram of weight. Roentgen-ray studies show that it is absorbed from the muscles two hours after injection. It will cure syphilis in the experimental animal as judged by the standards of observation, serology and negative lymph node transfer.

It has been used on a large number of patients, and the results would seem to indicate that it ranks almost equal to the older arsphenamins. An

important point is ease of administration, it being given intramuscularly. When dissolved in distilled water to which 2 per cent butyn has been added, it is well tolerated by the patients. The injections produce about the same amount of pain and tenderness as do the ordinary bismuth injections.

There are fewer indurations seen after its use, probably because it is given in an aqueous vehicle rather than in an oily one. A course consists of about twenty injections of .2 gram each given twice a week. Patients with seronegative primary syphilis treated with this drug have almost uniformly remained symptomatically and serologically negative.

Patients with late primary and secondary syphilis have become Wassermann-negative after about fourteen injections and have suffered very few serologic, cutaneous or mucous tissue relapses. Perhaps one of the most striking facts in these early cases is the very low incidence of positive spinal fluid findings found after treatment. In this respect bismarsen excelled arsphenamin treatment. Healing of the primary and secondary lesions has been somewhat slower than when arsphenamin is used—the spirochetes disappear from the chancres in about thirty-six to seventy-two hours. Bismarsen has reduced to negativity some cases which had remained "Wassermann-fast" after the usual methods of treatment. It is safe and valuable in cardiovascular syphilis. Here it has given marked symptomatic relief although the serologic results have not been striking. The results in neurosyphilis have not been any better than those from the use of the other arsphenamins.

Very few untoward effects have been noted. The few nitritoid reactions seen after its use have been mild. The skin tolerates it nicely. One instance of exfoliative dermatitis has been reported. It should be used only with caution where there is a history of previous dermatitis from arsphenamin. The gums, gastro-intestinal tract and kidneys bear its administration well.

Time alone can be the judge of the value of any new drug, but evidence so far points toward bismarsen being very worthy of a place among our antisyphilitic agents.

H. J. TEMPLETON, Oakland.

Immunology

Nontoxic Therapeutic Vaccines.—The most serious objection to the vaccine therapy of acute infectious diseases is the danger of increasing the already existing toxemia. The discovery of Ramon that certain bacteria can be detoxicated by formaldehyd without destroying their antigenic properties is, therefore, of clinical significance.

Wherry [1] and his coworkers of the department of bacteriology and preventive medicine, University of Cincinnati, have recently tested the value of such detoxicated vaccines in the treatment of typhoid fever. From their preliminary data it appears: (1) that the course of typhoid fever is shortened by such vaccines; (2) that the incidence of complications is decreased (7 per cent with the vaccine, as compared with 36 per cent in their untreated controls); and (3) that the death rate is decreased. They report no deaths in twenty-eight cases thus far treated with the vaccine, as compared with a death rate of 10 per cent in their untreated controls.

The authors ask for help in collecting additional data before drawing a final conclusion. The technique for the preparation of the nontoxic vaccine is given in their paper.

W. H. MANWARING, Stanford University.

REFERENCE

1. Wherry, W. B., Le Blanc, T. J., Forhay, L., and Thomas, R.: The Treatment of Typhoid Fever with Detoxicated Vaccine, Jour. Infect. Dis., 1928, Vol. xliii, p. 189.

University of California Man Studies Sex Among Insects.—Calling attention to the importance of the amount of food received by organisms during the early stages of life, Professor W. B. Herms, parasitologist and entomologist at the University of California, has just demonstrated that the ratio of male to female among certain insects can be varied at will by the amount of food given them during the larvae state.

He found that by limiting the feeding period of larvae of the green bottle fly he could raise almost twice as many males as females, while with a plentitude of food he obtained about two or three times as many females as males.

He found that one species of mosquito reacted just the opposite of this. By feeding the larvae of the mosquito a limited amount of yeast he obtained about one-half as many males as females, while by feeding four times as much yeast he obtained more males than females.

The food, he explains, does not alter the sex characteristics of the larvae; it merely determines which sex shall predominate among the grown insects of the experimental lot by allowing the weaker sex to die. That is, among the bottle flies, the male larvae can exist on less food than the female, consequently more of them live to maturity. Among the mosquitoes just the opposite holds, the females subsisting on a limited diet more successfully than the males.

In addition to this effect on sex, Professor Herms found, also, that the amount of food given the larvae had an important effect on the size of the later developing adult insect. In the case of the bottle flies he found that those which received a very limited amount of food developed shorter wings than the others. But, contrary to what might be supposed, the longest wings were not found on those which had received as much food as they would take. The greatest average wing length occurred in the group which had merely a moderate supply of food during the larval stage. The same fact was observed with regard to the mosquitoes, though to a smaller degree.

Professor Herms obtained his variation in food supply by the following method. In the case of the green bottle flies (*Lucilia sericata*) a batch of larvae was allowed to feed on beef lung. After thirty hours of feeding, he began removing them, one hundred at a time, at six-hour intervals; allowing them to continue development in a bed of sand. As a result of this some of the flies had only thirty hours of feeding, and some as much as ninety-six hours. In the case of the mosquitoes (*Theobaldia incidens*), larvae of the mosquitoes were placed in jars of distilled water, seventy-five or one hundred to a jar. To these yeast was fed in varied amounts, from one gram to five grams for each jar.—*U. C. Clip Sheet.*

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION

WILLIAM H. KIGER.....President
MORTON R. GIBBONS.....President-Elect
EDWARD M. PALLETTE.....Vice-President
EMMA W. POPE.....Secretary

OFFICIAL NOTICES

Council Meeting.—The next meeting of the Council will be held at the Palace Hotel, San Francisco, January 12, 1929, at 10 a. m.

* * *

Membership Record—1928

County	Delinquents	Members
Alameda	3	406
Butte	1	20
Contra Costa	3	30
Fresno	4	103
Glenn	0	8
Humboldt	1	33
Imperial	2	22
Kern	0	48
Lassen-Plumas	0	14
Los Angeles	54	1684
Marin	0	20
Mendocino	1	15
Merced	2	20
Monterey	2	27
Napa	0	23
Orange	1	88
Placer	1	29
Riverside	1	49
Sacramento	0	127
San Benito	1	7
San Bernardino	0	103
San Diego	4	223
San Francisco	12	920
San Joaquin	0	83
San Luis Obispo	1	11
San Mateo	3	31
Santa Barbara	0	68
Santa Clara	2	143
Santa Cruz	1	29
Shasta	0	10
Siskiyou	0	15
Solano	1	18
Sonoma	1	44
Stanislaus	2	38
Tehama	1	11
Tulare	0	41
Tuolumne	0	5
Ventura	2	24
Yolo	2	23
Yuba-Sutter	0	14
Total	109	4627
1927 total		4410
Gain in 1928		217

The above table again graphically pictures the growth of the California Association, the effective work of the forty county secretaries, and the loyalty of the membership.

* * *

Coöperation of Members Asked in Study on Medical Costs.—The Committee on the Cost of Medical Care is at present securing data from cross sections of ten different states. California is one of the ten selected; and through local health officers or organizations a specialized study is to be made in various cities, towns, and counties.

The secretary of the American Medical Association, Dr. Olin West, has asked for the coöperation of the members in the localities selected, with the representatives of these investigating committees, particularly as regards corroboration of statements concerning diagnosis and of fees claimed to have been paid by said patients.

The following localities have been selected for investigation: Cities of Long Beach, Los Angeles, Oakland, Pasadena, Riverside, Sacramento, San Francisco, San Luis Obispo, and Santa Barbara; counties of Madera, San Diego, and San Joaquin; and towns of Crockett, Pittsburg, and Woodland. The work is now in progress, and the coöperation of the members in these localities is earnestly requested.

* * *

Addressograph Service.—The California Medical Association has installed an addressograph in the state office and is now prepared to furnish this service, which our members have so frequently requested. Envelopes, professional cards, reprints, and letters by our advertisers will be addressed to members of the California Medical Association at a minimum cost.

Changes in mailing address will be kept to date monthly. Rates will be furnished on request.

Send your orders and envelopes to be addressed to 1016 Balboa Building, 593 Market Street, San Francisco.

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Notice to Members.—See Readers' Forum, page 70, this issue.

COMPONENT COUNTY SOCIETIES

ALAMEDA COUNTY

The annual meeting of the Alameda County Medical Association was called to order by President Lohse at 8:20 p. m. at the Ethel Moore Memorial Building, Oakland. The program for this meeting was presented by the staff of the new Peralta Hospital and consisted of a symposium on "Gastro-Intestinal Disorders" both from a medical and surgical standpoint. Dr. E. M. Loomis was the first speaker, discussing the newer theories of the etiology of the vomiting of pregnancy. The doctor said that the chief bugaboos of the obstetrician were eclampsia and the vomiting of pregnancy, and that recent researches pointed to the fact that both were dependent upon the same pathologic physiology. While eclampsia is decreasing in instance, vomiting of pregnancy is on the increase. The theory sponsored by Doctor Loomis was that both conditions are due to hypoglycemia. He reported experimental work, which has been done on series of cases including both mild and severe types which were very successfully handled by the administration of glucose. The second paper of the evening was by Q. O. Gilbert on "Duodenal Stasis." Doctor Gilbert reviewed the physiology and anatomical changes which might bring about this condition, advising careful selection of cases for surgical treatment. The third paper was on the "Pathologic Physiology of Intestinal Obstruction" by Fletcher B. Taylor. The doctor illustrated his talk with lantern slides, saying

in part that an unrelieved obstruction causes death, and, in general, the higher the obstruction the more rapid the death. He pointed out that various authors have thought the effects due to (*a*) intoxication, (*b*) loss of necessary metabolites, (*c*) splanchnic shock, the first two offering the most practicable information. He reviewed Whipple's work on obstruction symptoms in normal animals rendered toxic by the injection of proteoses precipitated from obstructed bowel content, and also the work of Mortan and Stabius, who prolonged the lives of animals with obstruction by the use of antitoxin for ***B. welchii***, which suggests the possibility that the proteoses of Whipple or the toxin of ***B. welchii*** may contribute as extrinsic poisons to the toxemia or death of the subject. Reviewing the blood chemistry changes found in the condition, he said that there is a rise in the nonprotein nitrogen of the blood, and in blood bicarbonate, but a marked drop in chlorids due in part to excretion into the lumen of the obstructed bowel. The doctor called attention to the fact that intravenous administration of salt solution saves the animal. The fourth paper was on the "Treatment of Intestinal Obstruction" by Dexter N. Richards, who stressed the importance of early surgery and the administrations of quantities of fluids and sodium chlorid. Dr. A. H. Rowe discussed the physiological obstruction in diabetes, saying that probably all cases of severe acidosis and coma due to diabetes mellitus are accompanied by peristaltic disturbance and cessation of digestion, which results in nausea, vomiting, and often regurgitation into the stomach of dark duodenal contents. The profound disturbances are probably due to a toxic ileus resulting from the severe acidosis. The doctor pointed out that it is extremely important to lavage the stomach of patients in severe diabetic acidosis and to repeat the process if there is any indication of reaccumulation of duodenal regurgitation into the stomach. Such lavage is probably best done with the Jutte tube introduced through the nasal passage. Care should be taken to prevent the insufflation of the stomach contents into the bronchial tract. Doctor Rowe reported cases in which such treatment of paralytic ileus had been necessary. The last discussion of the evening was presented by Dr. W. B. Palamountain on the subject of "Some Surgical Aspects of Peritonitis." The speaker considered peritonitis in its relation to intestinal obstruction. He said that the clinical symptoms of peritonitis and obstruction are so much alike that it is often impossible to distinguish between them. They may be associated, and if so, it is necessary to treat the obstruction as well as the peritonitis even though it be secondary to the inflammatory condition. He called attention to the fact that the intestine, greatly distended with gas and fluids, has lost its peristaltic power and that peristalsis can only be restored when such pressure is relieved by drainage. The pressure within obstructs the circulation which aids in maintaining the paralysis. The doctor advocated drainage with the washing out of the distended segment with salt solution. The discussion on this symposium was opened by Doctors Strietmann and Dukes.

The scientific program was followed by the annual reports of the officers and the chairmen of the standing committees, after which the tellers announced the results of the election and the officers for the ensuing year were installed. There being no further business the meeting adjourned.

GERTRUDE MOORE, *Secretary.*

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CONTRA COSTA COUNTY

The annual banquet of the Contra Costa County Medical Society was held in Martinez, November 17, in the Veterans Memorial Hall, at which a duck dinner was enjoyed, Dr. John Beard acting as toastmaster. Mrs. I. O. Church of Martinez gave several vocal selections, assisted by Mrs. Elvira Johnson at the piano. A number of miniature motion picture films, comic and educational, were shown by Dr. Fitzpatrick of Martinez.

A vote of thanks was given Dr. E. Merrithew of Martinez, who was responsible for the plentiful supply of "ducks."

There was a splendid crowd from all parts of the county, and it was agreed that such informal gatherings of doctors and their wives promote a closer bond of friendship among professional brethren.

* * *

At a well-attended meeting held at the home of Dr. M. L. Fernandez of Pinole, the Contra Costa County Medical Society concluded its business for the year by electing officers for the ensuing year of 1929.

The following were elected to office in the society: St. John L. Hely of Richmond, president (second term); J. W. Bumgarner of Richmond, vice-president; S. N. Weil of Selby, secretary-treasurer; J. M. McCullough of Crockett, delegate; St. John L. Hely of Richmond, alternate delegate; John Beard of Martinez, censor (three-year term).

The meeting night of the society was changed from the second Saturday of each month to the second Tuesday of each month by unanimous vote of those present.

Discussion as to how the meetings could be made more attractive in order to obtain a better attendance was held, and it was decided by the chair to appoint two members to be responsible for the scientific and social arrangement for each meeting. Doctors U. S. Abbott and J. W. Bumgarner are to arrange the meeting for January 8, 1929, to be held in Richmond.

At the close of the meeting Mrs. M. L. Fernandez served a very delightful supper.

Those present: U. S. Abbott, J. W. Bumgarner, H. L. Carpenter, L. St. John Hely, M. D. Keser, L. H. Fraser, H. Vestal of Richmond; M. L. Fernandez, Pinole; John Beard, Martinez; J. M. McCullough, W. A. Rowell of Crockett; S. N. Weil, Selby.

S. N. WEIL, *Secretary.*

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FRESNO COUNTY

At the November meeting of the Fresno County Medical Association the following officers were nominated for the year 1929: Charles A. James, president; R. W. Dalgren, first vice-president; Mary Butin, second vice-president; J. M. Frawley, secretary-treasurer; N. J. Dau, assistant secretary-treasurer. Delegates to the state convention, T. F. Madden, and C. O. Mitchell. Alternates, A. E. Anderson and W. G. Milholland. Governor, E. R. Scarboro.

The evening was then given over to the discussion of medical education, the principal addresses being made by Doctor Porter, dean of the Medical College of the University of California, and Doctor Ophüls, dean of Stanford Medical College.

Doctor Porter said that the principal function of the physician is to readjust people. Those who cannot be readjusted must be helped and made as comfortable as possible. The function of the medical school is not to teach the student everything about medicine, but to teach him how to use the method of science in carrying out his daily work, always bearing in mind the interest and welfare of the patient.

Doctor Ophüls stressed the point that the main function of the medical school is the training of medical practitioners and that, therefore, their training should be practical. The students should have the assistance of men who are actually in practice; otherwise they are not in touch with the problems of practice.

Doctor Ophüls also discussed the relation of the practitioner to the public health movements. He be-

lieves that the medical man should be a leader in the field of preventive medicine and not a follower of the layman. This can be achieved by giving instruction to the medical student in the college. Another important feature in the medical education is the training of the specialist. This should be done after a period in practice.

Dr. Thomas F. Madden said he thought that the time had come when the medical profession, in order to retain its prestige, must give up its mystery and educate the community. The younger men should speak before lay organizations and tell them what is going on in the medical world.

Dr. C. P. Kjaerbye considered that the question for the medical schools to decide was one of selection. Men who have scientific bent should be encouraged to perfect themselves in the fundamental sciences, but those who are chiefly interested in the readjustment of thir fellow man should be brought as early as possible into contact with the cases.

Dr. C. O. Mitchell thought that one important function of the medical college which was neglected was the training of the student in business methods.

This meeting was public, and was attended by many of the school teachers and public health workers of the county.

* * *

The December meeting of the Fresno County Medical Society was held in the Fresno State College Auditorium, and was open to the public.

Dr. Charles Kofoid of the University of California was the speaker of the evening. He interpreted the Canti moving-picture films regarding the action of radium and x-ray on the growth of transplant cancer tissue grown on media. The hall was filled, and Doctor Kofoid was apparently very much appreciated.

Following the lecture, a short business meeting was held at which the annual election of officers took place.

JOHN M. FRAWLEY, *Secretary.*

PLACER COUNTY

The Placer County Medical Society met in the Masonic Hall at Auburn, November 17, the meeting being called to order by Vice-President J. Gordon Mackay.

There were present the following members and visitors: Members—Doctors Mackay, Rooney, Fay, Russell, Durand, Thoren, Peers, C. Conrad Briner, Monica Stoy Briner, L. B. Barnes, Dunievitz, Eveleth, Myers, and Kalman. Visitors—Mr. Thoren of Weimar, Doctors Paul Barnes of Loomis, Kanner, Sevier, and Haig of Sacramento; Illick of Lincoln, and Kuhn of Weimar.

This being the annual meeting it was the date of election of officers. The election resulted as follows: Max Dunievitz of Colfax, president; C. Conrad Briner of Lincoln, vice-president; Robert A. Peers of Colfax, secretary-treasurer; Charles J. Durand of Colfax, associate secretary; C. E. Lewis of Auburn, delegate; J. A. Russell of Auburn, alternate.

Vernon V. Rood, M. D., of Grass Valley, a member in good standing of the Butte County Medical Society, having presented his transfer card, was elected to membership in the Placer County Medical Society.

Paul D. Barnes, M. D., of Loomis was also elected to membership.

F. E. McCullough, M. D., of North Sacramento, having applied for transfer to the Sacramento Society, such transfer was granted.

Following the business meeting the following literary program was presented:

Doctor Dunievitz of Colfax presented a series of cases as follows:

Two cases of myelogenous leukemia—one in a male eighteen years of age, of known two months' duration, whose white count ran from 400,000 to 600,000. The patient had been treated with deep x-ray therapy, without change in his condition. This man had a severe sepsis and pyemia two years previously. The second case was a woman about fifty-five years of age, of known duration of about twenty years. She had had x-ray therapy with definite benefit. During the course of the illness she had had pneumonia twice and peritonsillar abscess once, making splendid recoveries. Her count had been as high as 300,000, at present running about 30,000.

Doctor Dunievitz also presented a case of perforation of aorta with hemopericardium in which all the physical signs, as well as fluoroscopy, indicated an aneurysm of the ascending aorta, but which was shown at autopsy to be a case of perforated aorta, apparently of atheromatous origin.

X-ray pictures of two cases of dextrocardium and situs transversus, both of which had come under his observation within a period of one week, were shown. One of these patients died shortly after of acute pulmonary edema and pericardial effusion.

Two unusual cases of goiter were then presented—one a man about fifty-five years of age where there was extreme calcification of a greatly enlarged thyroid gland, with pressure symptoms but no thyroid toxicity. The other was an enormous adenomatous goiter with pressure symptoms and definite hypothyroidism. This goiter weighed 850 grams after removal.

The last case Doctor Dunievitz presented consisted of x-ray pictures of a man who had had two spontaneous pneumothoraces—the first five years ago at the left apex, and the other one month ago at the left base.

Following the case presentation, Dr. Thomas R. Haig of Sacramento gave a very instructive talk on "Fractures of the Foot and Ankle." Doctor Haig discussed in detail fractures of the individual bones of the foot and ankle, going very thoroughly into the treatment of the various types of fractures which can occur in this region. His address was extremely interesting and practical. It was discussed by Doctors Dunievitz, Illick, and Haig.

There being no further business the meeting adjourned. ROBERT A. PEERS, *Secretary.*

SAN BERNARDINO COUNTY

The president being absent because of illness, the first vice-president, Dr. Walter Pritchard, called the meeting to order at 8:10 p. m.

Twenty-three members were present, the small number being due to the influenza epidemic.

The minutes of the previous meeting were read and approved.

A letter from the Los Angeles Milk Commission was read and approved.

The notification of the postponement of the "Clinic Week" of the Los Angeles Medical Society was read.

The question of the publication in the press of a bulletin regarding influenza was presented by Doctor Pritchard, and after a general discussion it was moved and seconded and passed that this be done. Articles will be prepared by Doctor Pritchard.

The program of the evening was then entered upon:

Exhibition of Cases of Arthritis from the Medical Service of the County Hospital by Dr. Gayle Moseley, Chief of Staff.

Prenatal Care and Its Value in Obstetrical Prognosis by Dr. Suzanne Parsons of the Bureau of Child

Hygiene, California State Department of Public Health.

Between the first and second papers the society members had the privilege of listening to our councilor, Dr. Lyle Kinney of San Diego.

Luncheon was served at 10 p. m.

E. J. EYTINGE, *Secretary.*

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SAN DIEGO COUNTY

At the annual meeting of the medical society at the close of election day the following names were announced as the selection of officers for 1929:

James F. Churchill, president; A. E. Elliott, vice-president; W. H. Geistweit, Jr., secretary; W. W. Belford, treasurer. Councilors: F. Macpherson, T. O. Burger, J. W. Sherrill. Delegate (two-year term): Martha Welpton. Alternate (two-year term): Lillian B. Mahan. Milk Commission (three-year term): W. W. Belford. Directory: Lillian B. Mahan.

Following the dinner at which these announcements were made, the society was treated to two excellent papers by their guests from Salt Lake City. Joseph E. Tyree, M. D., gave a comprehensive outline of the surgery of the foot, discussed by Doctors Macpherson and Doig. Dr. George Richards presented a well-illustrated discussion of ulcer of the stomach, drawing upon his rich experience in the clinic in Salt Lake City to give his audience some very practical views on this important subject. His paper was discussed by Doctors Howard, Stealy, Churchill, Pollock, and Richards.

The November meeting of the medical staff of Scripps Memorial Hospital was featured by a presentation of that always practical subject, "Colitis" by Dr. A. B. Smith. The doctor's approach to his subject was from the standpoint of the roentgenologist, and was splendidly illustrated throughout by many x-ray films. Doctor Weiskotten opened the discussion with some illuminating remarks on the interpretation of films of the gastro-intestinal tract. Discussion was continued by Pollock, Oatman, Burger, Potter, and Parker.

Doctor McEachren and Father Mouillinier, representing the American College of Surgeons, were in town December 7 in the interest of hospital betterment.

ROBERT POLLOCK.

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SAN JOAQUIN COUNTY

The annual meeting of the San Joaquin County Medical Society was held at the banquet table, Hotel Lincoln, Thursday, December 6, at 7 p. m.

After an excellent dinner the meeting was called to order by John J. Sippy, president. Twenty-seven members were in attendance.

The chair appointed Doctors F. S. Marnell, C. A. Broaddus, and Fred Foard to act as tellers.

The minutes of the previous meeting were read and approved. The annual report of the secretary-treasurer was read.

Moved by Dewey R. Powell, seconded by Doughty, that the report of the secretary-treasnrer be mimeographed and a copy of it mailed to every member of the society. The motion carried.

The admissions committee reported favorably on the application for membership of Dr. Eisuke Islukawa.

The necrology committee submitted a short obituary of our departed members, Doctors Tuggle, Stagner, and Maggs. These obituaries are printed on page 61 of this issue.

The report was received and spread upon the minutes.

* * *

A communication from the secretary of the California Medical Association relative to the Committee on the Cost of Medical Care was read.

Action: Moved by Doctor Dozier, seconded by Doctor Kaplan, that the program committee procure Dr. Nathan Sinai, member of the Committee on the Cost of Medical Care, as speaker for our January meeting. The motion carried.

A communication from the secretary of California Medical Association relative to the subject of "Bedside Medicine" or "Medicine Today" as they appear in CALIFORNIA AND WESTERN MEDICINE was read and ordered filed.

A communication from Dr. J. D. Dameron relative to the Crippled Children Act, as conducted by Dr. Markel of San Francisco, was read.

Action: Moved by Doctor Dozier, seconded by Doctor Doughty, that the secretary be instructed to write a letter of appreciation and thanks to be sent to the Rotarians of Stockton for their splendid assistance in maintaining the clinic for crippled children. The motion carried.

The tellers reported the result of the election as follows: C. V. Thompson, president; F. G. Maggs, first vice-president; G. H. Rohrbacher, second vice-president; Fred J. Conzelmann, secretary-treasurer.

Board of Directors—J. W. Barnes, H. J. Bolinger, H. S. Chapman, R. T. McGurk, B. J. Powell, Dewey R. Powell, and George H. Sanderson.

Admissions Committee—John J. Sippy, chairman; J. P. Hull, C. F. English, S. R. Arthur, and C. A. Broaddus.

Ethics Committee—Linwood Dozier, chairman; Minerva Goodman, J. E. Nelson, H. C. Peterson, and N. E. Williamson.

Finance Committee—J. D. Dameron, chairman; J. V. Craviotto and Dewey R. Powell.

Program Committee—George H. Sanderson, chairman; G. H. Rohrbacher and P. B. Gallegos.

State Delegates—J. W. Barnes, B. J. Powell.

Alternates—G. H. Rohrbacher, Margaret H. Smyth.

Due to the death of Doctor Maggs, the office of first vice-president was vacant.

Dr. Dewey Powell nominated Dr. Linwood Dozier for the office of first vice-president. The nomination was seconded by Doctor McGurk.

Doctor Dozier was unanimously elected first vice-president.

The chair presented Dr. Alson Kilgore of San Francisco, who gave an interesting and very practical talk on the subject of "Cancer of the Breast."

A lively discussion followed in which Doctors Dozier, Blackmun, English, Chapman, Kaplan, Barbour, Sheldon, and McGurk participated. In closing Doctor Kilgore remarked that cancer meant the early treatment of a simple problem, rather than the late treatment of a serious problem.

Moved by Doctor McGurk, seconded by Doctor Broaddus, that the meeting adjourn in memory of our departed colleague, Doctor Maggs. The motion carried.

FRED J. CONZELMANN, *Secretary.*

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SANTA BARBARA COUNTY

The regular monthly meeting of the Santa Barbara County Medical Society was held on Monday, November 12, at 8:15 p. m. in the St. Francis Hospital, with President Sansum in the chair.

There were fourteen members of the society present.

Dr. Horace Pierce gave a very interesting talk on the injection treatment of varicose veins, showing four cases with the results of treatment, which was followed by questions and discussions.

Doctor Atsatt then presented three interesting and instructive reels of "Posture and Rickets" pictures.

The meeting then went into executive session, and a communication from Doctor Nuzum regarding Heart Clinic was read. It was moved, seconded, and

carried that in the near future a meeting be devoted entirely to heart conditions.

An invitation to the annual clinic of the Los Angeles County Medical Society, December 3-8, was read and ordered filed.

A communication from Doctor Pope of the California Medical Association regarding an investigation on the cost of medical care now being conducted, and stating that Santa Barbara was one of the selected localities, was read and ordered filed.

Doctor Means then spoke of the importance of reading the articles regarding health centers and free clinics in the proceedings of the House of Delegates.

There being no further business the meeting adjourned.

* * *

The regular meeting of the Santa Barbara County Medical Society was held on Monday evening, December 10, at the University Club.

Dinner was served at 7:15 p. m. to twenty-three members of the society.

At the conclusion of the dinner Dr. John Woolsey of San Francisco gave a most interesting and instructive illustrated talk on stomach surgery of today. The subject was then discussed by Doctors Brown, Robinson, Thorner, Freidell, Stevens, and Means.

At the conclusion of the scientific program the society went into executive session, and Doctors Otto L. Munch and William R. Hunt were unanimously elected to membership.

The president then appointed the following as chairmen of committees for the annual meeting to be held January 14, 1929:

Program Committee—Doctor Brush.

Entertainment Committee—Doctor Profant.

Supper Committee—Doctor Means.

There being no further business the meeting adjourned. W. H. EATON, *Secretary.*

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SANTA CLARA COUNTY

At the annual meeting of the Santa Clara County Medical Society, November 21, the following officers were elected for the year 1929:

E. P. Cook, president; Karl Pelkan, first vice-president; A. H. McFarlane, second vice-president; R. H. Prien, third vice-president; C. M. Burchfiel, secretary; Harry Hoag, treasurer. Delegates: Fred S. Ryan and L. Boonshaft. Alternates: C. M. Burchfiel and E. M. Miller. Councilors: J. R. Williams, E. M. Miller, and B. E. Loehr.

C. M. BURCHFIEL, *Secretary.*

CHANGES IN MEMBERSHIP

New Members

Kern County—Milton M. Kay, Shafter.

San Francisco County—Coleman A. Block, F. Edwyn Garfinkle, Berenice G. Peacock, Angeline Piscitelli, San Francisco.

Transferred Members

John F. Brownsberger, from Los Angeles County to North Carolina.

James Eaves, from San Francisco to Alameda County.

William W. Eldredge, from Los Angeles to San Bernardino County.

Ruth Carpenter Hart, from Sacramento to Siskiyou County.

Frank E. McCullough, from Placer to Sacramento County.

Marcus W. Pascoe, from Kern to Los Angeles County.

Orville Rockwell, from Humboldt to San Francisco County.

Vernon V. Rood, from Butte to Placer County.

Deaths

Franklin, Blake. Died at Los Gatos, December 1, 1928, age 52 years. Graduate College of Physicians and Surgeons, San Francisco, California, 1904. Licensed in California, 1904. Doctor Franklin was an affiliate member of the Santa Clara County Medical Society, a member of the California Medical Association, and a Fellow of the American Medical Association.

Haake, Charles H. G. Died at San Francisco, December 4, 1928, age 40 years. Graduate of College of Physicians and Surgeons, Columbia University, New York, 1913. Licensed in California, 1914. Doctor Haake was a member of the Shasta County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Maggs, Frederic G. Died at Stockton, November 21, 1928, age 36 years. Graduate of University of California Medical School, 1920. Licensed in California, 1920. Doctor Maggs was a member of the San Joaquin County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Williams, Fred H. Died at Selma, December 8, 1928, age 53 years. Graduate of University Medical College, Missouri, 1902. Licensed in California, 1903. Doctor Williams was a member of the Fresno County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

OBITUARIES

Samuel P. Tuggle

1856-1927

Dr. Samuel P. Tuggle, a member of the San Joaquin County Medical Society since 1910 and a member of the staff of the Stockton State Hospital, died on December 18, 1927.

Doctor Tuggle was born in Tennessee, graduated from the University of California in 1889 and was for some years in the anatomical department as quiz master. He did a general practice in San Francisco for many years, and for two years was superintendent of the Home of Inebriates, situated in north San Francisco. This work in an institute for alcoholics and drug habitués as well as for the treatment of insane patients pending their commitment to one of the state hospitals, focussed his interest on the treatment of mental cases. In 1910 he received an appointment to the Stockton State Hospital staff.

Several years before his death he suffered a stroke of paralysis, but after a period of months was able to resume his activities although still somewhat handicapped. His wonderfully fine spirit throughout this illness was a splendid example to all with whom he came in contact. Doctor Tuggle reflected his Southern ancestry in the hospitality of his home; his greatest delight was in gathering his friends and confrères about his fireside. To those who shared this friendship and to his associates on the State Hospital staff his genial presence has been particularly missed.

Doctor Tuggle is survived by his wife and his daughter, Julia, to whom the members of this society extend their most sincere sympathy.

Charles Elmer Stagner

1883-1928

Dr. Charles Elmer Stagner was born and raised in Wheatland, California, attended school there, and later graduated from the Marysville high school. He received his premedical education at Stanford University where he was a member of the Kappa Alpha Fraternity. He graduated from the medical depart-

ment of Cooper Medical College in 1912 at which institution he was affiliated with the Omega Upsilon Phi Medical Fraternity. Doctor Stagner interned at the Sacramento County Hospital and the San Joaquin General Hospital, following which services he practiced for some years in Gustine, Merced County. For the last several years before his death he was treated at Tracy, San Joaquin County, and for a period was again at the San Joaquin General Hospital where he assumed charge during the absence of Doctor Friedberger in Europe.

Doctor Stagner's unfailing good nature and keen sense of humor made for him many friends, who greatly regretted his death from pneumonia at Dameron Hospital, Stockton, on January 28, 1928.

Doctor Stagner is survived by his wife and child.

Frederic George Maggs

1892-1928

Dr. Frederic George Maggs was born at Baden, San Mateo County, August 1, 1892. He was a great lover of all outdoor sports and played on the high school football team as well as serving as the president of the student body. He received his medical training in the University of California and graduated from that institution in 1920. During the years of his medical education he held the State of California Scholarship in 1915-16, Carrie M. Jones Scholarship in 1916-17, William Watt Kerr Scholarship in 1917-18, again was awarded the Kerr Scholarship in 1918-19. These awards are ample evidence of his devotion to his work and his high scholastic record. During the fall of 1918 he served for a while with the Student Army Training Corps. He was a member of the Nu Sigma Nu Medical Fraternity. Doctor Maggs interned at the University of California Hospital at San Francisco in 1919-20 and practiced at Riverdale, Fresno County, and in Watsonville before coming to Stockton.

During the comparatively short number of years Doctor Maggs had been in our midst he had won for himself not only a splendid following among his patients, but an enviable standing with his fellow practitioners. His professional ethics were above question, as by nature he was absolutely honest and at all times and under all circumstances a thorough gentleman.

His untimely death at the age of thirty-six, the result of pneumonia, on November 21, 1928, caused universal regret among the citizens of Stockton and was particularly deplored by his fellow members of the San Joaquin County Medical Society.

Doctor Maggs was married on February 21, 1921, in San Francisco to Ethel Reeve Eckstrom and has three charming little daughters, Eleanor, Marjory, and Dorothy. To Doctor Maggs's family the members of this society convey their most sincere sympathy.

NEVADA STATE MEDICAL ASSOCIATION

R. R. CRAIG.....President
W. A. SHAW.....President-Elect
H. A. PARADIS.....First Vice-President
R. P. ROANTREE.....Second Vice-President
HORACE J. BROWN.....Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER, S. K. MORRISON.....Trustees

COMPONENT COUNTY SOCIETIES

WASHOE COUNTY

Résumé of meetings of the Washoe County Medical Society for the year 1928.

This medical society holds monthly meetings on the second Tuesday of each week at the Sciots Club at Reno. During July and August no meetings are held, and the September meeting is usually held to arrange for the annual state meeting which convenes during that month.

With few exceptions the scientific program has been by outside talent, mostly from the medical centers in San Francisco. The meetings are quite well attended and the local coterie has evinced keen interest in the papers presented. Lectures are illustrated by means of lantern slides, cinema reels, diagrams, charts, etc. Discussion is usually spirited and interesting.

The following outside speakers have addressed the society during the past year:

Doctor Newman of San Francisco, on "Quinidin in Various Heart Irregularities." The lecture was illustrated with lantern slides, showing both the animal and the human heart in normal and pathological conditions. The views exhibited of hearts with broken compensation shown by the fluoroscope were highly instructive. The therapy of quinidin, when to medically exhibit it and when to withhold it, was dwelt upon and the dangers of the drug pointed out as well as its benefits.

Mrs. John O. McReynolds of Texas, wife of Doctor McReynolds, was the guest of the society and spoke in the interest of the Woman's Medical Auxiliary Society. The Nevada State Medical Society had at a former meeting endorsed this movement. Mrs. McReynolds outlined the purposes of the organization. We are all of the opinion that if this organization becomes active along the lines indicated by Mrs. McReynolds it will be of worth while benefit to every physician.

Dr. Sterling Bunnell of San Francisco talked on the technical subject of "Reconstruction of the Hand." This most highly interesting talk was illustrated with numerous lantern slides drawn from a great abundance of clinical material. Doctor Bunnell is to be congratulated upon the splendid results obtained in this highly technical and difficult field of surgery, so little understood by the majority of the profession.

Dr. Petre Trisca of Budapest, Hungary, was an interesting visitor. The doctor was on a tour of inspection of the American medical profession, and talked on the subject of "Medical Fraternity." We gathered from his talk that, in his opinion, the profession of this country had not developed the fine points of medical etiquette that obtain in Europe. The doctor said his purpose in visiting the United States was to gather material for his forthcoming book on the subject of "Medical Fraternity." While we give Doctor Trisca credit for holding a high medical ideal, we hardly feel that an estimate of the American medical profession can be made correctly by anyone not conversant with American life and customs. One can hardly interpret a people without a correct knowledge of their language, for, as has been well said, language is a map of the mind. Without that knowledge no analysis of people can be made which will come anywhere near a correct interpretation of their ideals.

Two sessions of the year's meetings were given over to studying reels furnished by the Kodakoscope people of San Francisco. It is a pity that so few of these valuable forms of instruction are as yet out for general instruction. With the assistance of such object methods of teaching, attendance at a medical meeting would be a delight and pleasure. We should like to see more movies of this kind.

The society was addressed by three members of the local profession. Dr. Arthur Grover, pathologist to the St. Mary's Hospital, gave an interesting talk on "Blood Chemistry." This advance in medicine is now so valuable an aid that it well behooves every physician to be able to interpret the significance of his clinical chart when returned by the pathologist. If it read, as did one of ours very recently, "Blood urea, 80 mg. per cent; creatinin, 8:8 per cent," then we should know that the "time of his departure is at hand."

Judge George A. Bartlett, eminent jurist of the Nevada bar, addressed the society on the "Medical-Legal Relation of Physician and Patient." Possibly

an old subject, yet one that would save serious vexation if every physician knew more of it. As Burns puts it in his verse, "To a Louse":

"O wad some Power the giftie gie us
To see oursels as ithers see us.
It wad frae mony a blunder free us,
An' foolish notion."

Doctor Bath gave a talk on the Mayo Clinic, his first visit being twenty years ago and his fifth visit last winter. The talk was upon the differences of technique and extended lines of work in the clinic. Doctor Bath stated that, so far as he could see, no better surgery was done today than was performed at his first visit. The surgery of twenty years ago was perfect and that was about all one could expect. The enormous variety of clinical material and the uniform courtesy of staff and attendants toward visiting physicians, the always courteous response to an inquiry, makes this Mecca of medicine a valuable resort for study and observation.

The conclusion of the year's work was the annual meeting, celebrated with a banquet given to the society by the retiring and genial president, Doctor Caples. This feature has heightened the good fellowship, and we are sure that it will stimulate an interest in carrying on the work of the profession. We believe that there is no other feature better than the common fellowship over the festal board. Let them be longer and later into the wee hours of the morning. The more we have of them the smaller will appear the beam in our brother's eye, for the mote in ours will then disappear. The address of the evening was given by Dr. Horace C. Pitkin of San Francisco. He spoke on the "Rôle of Postural Training in Medicine." This splendid talk was illustrated with lantern slides, and showed conclusively that this line of orthopedic surgery is to most of us an unexplored problem, but one that if properly worked will solve many of the past difficulties of "functional" troubles—an ingenious phraseology that serves to satisfy the patient, but still leaves the physician groping in the dark.

Election of the following officers concluded the year's work: For president, Dr. J. La Rue Robinson; vice-president, Dr. A. L. Stadtherr; secretary-treasurer, Dr. Thomas W. Bath.

THOMAS W. BATH, *Secretary.*

NEVADA NEWS

The following were elected officers for 1929 at the annual meeting held at Bower's Mansion, September 21 and 22: R. R. Craig, Tonopah, president; W. A. Shaw, Elko, president-elect; H. A. Paradis, Sparks, first vice-president; R. P. Roantree, Elko, second vice-president; Horace J. Brown, Reno, secretary-treasurer; D. A. Turner, Reno, trustee. Delegate to American Medical Association, Horace J. Brown, Reno. Alternate, R. R. Craig, Tonopah.

* * *

It was voted at the annual meeting to raise the annual dues to $10; this to include subscription to CALIFORNIA AND WESTERN MEDICINE, but not to include county society dues.

* * *

The White Pine Medical Society was recently organized at Ely, and elected the following officers: G. W. Green, Ely, president; O. Hovenden, McGill, first vice-president; J. C. Agagee, Ely, second vice-president; E. B. Muir, East Ely, secretary; W. H. Frolich, East Ely, treasurer.

Their regular meetings will be held the first Thursday of each month.

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The Washoe County Medical Society elected officers for 1929 as follows: J. L. Robinson, Reno, president; A. L. Stadtherr, Reno, vice-president; T. W. Bath, Reno, secretary-treasurer.

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We regret to report the death on December 8 of Dr. D. H. Pettingell of Midas, who was one of the oldest practitioners of the state and one of our highly esteemed members. Doctor Pettingell died of post-influenzal pneumonia.

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J. R. Cunningham, Tonopah, had the misfortune to fall and break his right leg in November, and is now confined at the Letterman General Hospital in San Francisco.

* * *

R. A. Bowdle, East Ely, has recently returned from two months spent in the East visiting various clinics.

* * *

Examinations were held by the Nevada State Board of Medical Examiners, November 5, 6, and 7. Five took the examinations of which four passed. Following were the successful candidates: T. W. Koldeway, C. J. Johnson, R. R. Craig, and Fleet Harrison.

UTAH STATE MEDICAL ASSOCIATION

WILLIAM D. DONOHER, Salt Lake.....President
H. P. KIRTLEY, Salt Lake.....President-Elect
M. M. CRITCHLOW, Salt Lake.....Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake.....
.....Associate Editor for Utah

COMPONENT COUNTY SOCIETIES

SALT LAKE COUNTY

The regular meeting of the Salt Lake County Medical Society was held in the Medical Arts Building, Salt Lake City, November 26.

The meeting was called to order by the president, William F. Beer, at 8:05 p. m. Forty-one members and two visitors were present. The minutes of the meeting of October 22 and November 12 were read and accepted without correction.

No clinical cases were presented.

The first paper of the evening was read by W. G. Schulte on "Nonspecific Prostatitis." He discussed the embryology, anatomy, growth, and atrophy, and pathology of the prostate gland; symptoms, diagnosis, and treatment of the disease.

This interesting paper was discussed by F. A. Goeltz, G. N. Curtis, L. N. Ossman, and E. M. Neher.

The next paper was by R. O. Porter on the "Therapeutics and Medico-Legal Aspect of Alcohol." He discussed the pharmacology and toxicology of the drug, its absorption and elimination. He demonstrated an instrument which he had devised for determining the amount of alcohol in the expired air. Discussion followed by Harold Van Colt, E. M. Neher, G. H. Pace, F. A. Goeltz, F. H. Ruley, William F. Beer, Doctor Clayburg, and George W. Middleton.

J. Z. Brown read an instructive paper on the "Doctor and Social Service," in which he brought out many points of timely interest to the profession. His paper was discussed by H. S. Scott, G. W. Middleton, J. P. Kerby, M. M. Critchlow, C. M. Benedict, William F. Beer, and W. T. Ward, who moved that the chair appoint a committee of three to study the methods of the next county and city physician and attempt to aid him in the appointment of assistants. Discussion by William F. Beer followed.

Application for membership, signed by Doctors Sexton and Woodbury, were read by the secretary.

Adjournment at 10:50 p. m.

* * *

The annual meeting of the Salt Lake County Medical Society was held in the Medical Arts Building, Salt Lake City, on Monday, December 10. The meeting was called to order at 8:10 p. m. by President William F. Beer. Fifty-three members and one visitor were present.

The minutes of the previous meetings were read and accepted without correction.

Marshall C. Sexton was elected to membership.

A letter from the Hourly Nursing Service was read. This was discussed by W. R. Calderwood and John

Z. Brown, who moved that the letter be acknowledged and filed. Seconded and carried.

Committee reports followed. The secretary read the committee's report of the smoke nuisance. W. R. Calderwood moved that it be sent to the Chamber of Commerce. Seconded and carried.

President Beer gave a short farewell address.

Reports by the Secretary, M. M. Critchlow, and the treasurer, J. E. Jack, followed. The Community Clinic committee's report was read by W. L. Rich.

The report of the Committee on Public Health and Legislation was read by M. M. Nielson. This was discussed by W. R. Calderwood, who moved that the chair appoint a committee to draft a resolution in support of legislation for a school for the feeble-minded. Seconded and carried.

Reports of the Medico-Legal Committee read by J. P. Kerby, the Necrology Committee read by the secretary, in the absence of J. U. Giesy, the Library Committee read by W. R. Tyndale, were then presented.

Verbal reports of the Boy Scouts Committee by L. J. Paul and of the Public Lectures Committee by Ralph Pendleton followed.

A report of the Fee Schedule Committee was given by J. P. Kerby. W. R. Calderwood moved that the committee be continued and report later. This was seconded, but not put to a vote, as the chair reappointed the same committee, over W. R. Calderwood's objection.

The report of the Community Clinic Executive Committee was given by C. M. Benedict, who requested two weeks' more time. The same committee was reappointed by the chair.

The following officers were unanimously elected for 1929: C. M. Benedict, president; M. M. Nielson, vice-president; B. E. Bonar, secretary; Clark Young, treasurer; W. F. Beer, censor.

F. J. Curtis reported for the Delinquent Boy Committee.

O. J. LaBarge moved that the outgoing officers be extended a vote of thanks. Seconded and carried.

Adjournment at 9:40 p. m., after which an informal smoker was held.

M. M. CRITCHLOW, *Secretary.*

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WEBER COUNTY

The regular meeting of the Weber County Medical Society was held November 24 at the Hotel Bigelow, President W. R. Brown presiding. The usual dinner preceded the meeting, especially good, as Dr. V. L. Ward furnished a venison steak for each. Forty-one members were present.

The first order of business for the evening was election of officers for the year 1929. The following were elected: A. H. Aland, president, nominated by Ezra I. Rich; E. P. Mills, vice-president, nominated by E. R. Dumke; George M. Fister, secretary, nominated by H. C. Stranquist; and S. W. Badcon, treasurer, nominated by E. P. Mills.

Delegates to state medical society: W. H. Budge, A. A. Robinson, A. H. Aland, R. L. Draper, and G. A. Dickson.

Alternates to state medical society: W. H. Whalen, M. J. Seidner, Frank K. Bartlett, L. S. Merrill, and E. R. Dumke.

The program for the meeting was a report by Dr. Ezra I. Rich and Dr. E. R. Dumke on the recent meetings of the American College of Surgery and Interstate Postgraduate Assembly.

President W. R. Brown appointed Doctors V. L. Ward, J. D. Harding, and W. J. Wright to audit the treasurer's accounts for 1928. Doctors A. H. Aland, Junior Rich, and N. H. Savage were appointed to arrange the program for the annual meeting and installation of officers in December.

Dr. W. R. Brown moved that the members of the society send a message of sympathy to Mrs. S. L. Brick at the death of her husband, Dr. S. L. Brick, November 13. Dr. Brick had practiced in Ogden for forty-two years.

GEORGE M. FISTER, *Secretary.*

UTAH NEWS

The Holy Cross Hospital Clinical Association held its regular meeting at the hospital the evening of November 18.

The following program was presented:

Ruptured Gastric Ulcer—Dr. Claude Shields.

Fracture of the Knee—Dr. T. W. Stevenson.

Empyema—Doctors Hummer and Johnson.

Gall stones in a Man of Seventy-eight—Dr. William Ward.

* * *

The Central Utah Medical Society is welcomed into the sisterhood of the Utah Medical Association.

This latest member of the state family was organized the evening of November 10, with the councilors of the state association officiating at its birth. Eight charter members comprise the present personnel, with Dr. T. R. Gledhill as president and Dr. Asa Dewey as secretary and treasurer. Meetings are the first Monday of each month. After organization short talks were given by the members of the state association and the new society. We wish at this time to invite Doctor Dewey, as secretary, to send in reports of meetings to the office of the editor for Utah, 701 Medical Arts Building, Salt Lake City, not later than the tenth of each month.

* * *

The Salt Lake Academy continue their weekly Thursday meetings in the rooms of the Intermountain Clinic, Deseret Bank Building, Salt Lake City. These programs are in the nature of reviews and discussions of pertinent medical and surgical problems. Programs are furnished in rotation by the membership.

The last program covered: a discussion of the value of spinal anesthesia in the treatment of peritonitic ileus; a consideration of the relation between apical abscess of teeth and the general symptomatology; and a résumé of the literature on renal glycosuria.

* * *

Instruction for Medical Reserve Officers.—Classes of instruction, under the direction of a competent officer, are now being held twice monthly for all Medical Reserve Officers in the headquarters of the Third Reserve Area, 104th Division O. R., Vermont Building, Salt Lake City. These classes are designed to prove of great benefit to medical officers of the Reserve, and those not now availing themselves of the privilege are urged to arrange to attend during the remainder of the winter and spring course.

University of California Alumnus Gives Twenty-five Thousand Dollars to Science.—As the result of a gift of $25,000 a year for the next five years from an alumnus, Dudley Cates of the class of 1911, the University of California will this year open an intensive study of neurological survey with special reference to the treatment of brain tumors, according to announcement by the regents.

Cates is a resident of Winnetka, Illinois, and holds the position of vice-president of Marsh & McLennan Insurance Company. The research work will be carried on under the direction of Dr. H. C. Naffziger, clinical professor of surgery at the University Medical School in San Francisco.

Doctor Naffziger states that the donor, although most anxious to see improvement of technique in the removal of brain tumors, which are at present often fatal, puts no limitation upon the surgical research which may be done under his sponsorship in the field of neurology, or the nervous system.—*U. C. Clip Sheet.*

MISCELLANY

Items for the News column must be furnished by the twentieth of the preceding month. Under this department are grouped: Comment on Current and Recent Articles in the Journal; News; Medical Economics; Readers' Forum; California State Board of Health; California Board of Medical Examiners; and Twenty-Five Years Ago. For Book Reviews, see index on the front cover, under Miscellany.

CALIFORNIA BOARD OF MEDICAL EXAMINERS

Foreword.—In one of the conferences held by officers of the California Medical Association to consider the proposed "Vocational Standards Department,"* which it is proposed to bring into existence by act of the legislature which will convene in January, 1929, the manuscript copy of an article by H. C. Christensen, former secretary of National Association of Boards of Pharmacy, came to light.

This article discussed in some detail the experience of the state of Illinois with a similar plan. That experience was so deplorable that the licensure certificates in medicine issued by Illinois from 1919-22 are refused recognition by the California Board of Medical Examiners, and by a considerable number of other examining boards in the Union.

This paper by Mr. Christensen presents so excellent an exposition of some of the questions at issue, and which now face the California professions of medicine, dentistry, and pharmacy, that the Executive Committee of the California Medical Association has ordered its publication in CALIFORNIA AND WESTERN MEDICINE so that the members of the California Medical Association might better understand the situation which confronts them. The fact that the paper was written and read to the California State Pharmaceutical Association in 1922 does not detract, but rather adds to its value as a somewhat impersonal presentation and comment on the situation confronting California at the time of this writing, in the year 1928.

Appended to the paper, and as shedding some sidelights on how justice worked out in the effort to clean house in Illinois, are excerpts taken from some of the Chicago newspapers of that time.

It is hoped that the publication of this material will inspire each county unit of the California Medical Association to take up a prompt study of this important problem and the issues which are at stake. The officers of the California Medical Association, who on behalf of the Association must act in its name, desire to know the viewpoint of the component county societies, and to have the full and enthusiastic support of every member in whatever procedure is decided upon as being best adapted for the protection of the public and of the medical profession.

PROBLEMS IN CONSOLIDATION OF PROFESSIONAL BOARDS†

By H. C. CHRISTENSEN

Secretary of the National Association of Boards of Pharmacy

In accepting your kind invitation to address the California Pharmaceutical Association at this meeting of the year 1922, I find that one of the embarrassments of meeting the same group frequently, is one's inability to present a new subject, or an old subject in a new light. My subject today, while not a new one, is at least a new phase of an old one. One of significant interest to present and future pharmacy as well as to the public which pharmacy serves.

How So-Called Consolidated Boards Came Into Existence

I want to discuss at this time the question of consolidation of state examining boards—the tendency toward which is sweeping over the country like the craze for jazz music, bobbed hair, and Eskimo pie.

Several states have enacted laws under which consolidation of boards is now in force—many more seriously contemplate it. Inasmuch as Illinois blazed the way in this form of legislation, it may appear paradoxical that I should be here raising the question of its advisability. But if Illinois was the first to enact an administrative code consolidating the examining boards, so Illinois, it seems, has been the first to demonstrate the fundamental weaknesses of the plan.

The Illinois Origin of the Departmental System

The enactment of the administrative code which made consolidation possible in Illinois came about through a reform movement sponsored by former Governor Lowden during his campaign for nomination for that high office. After his election, the law proposing consolidation became an administration measure. Its advocates claimed that by grouping all examining boards in a department or bureau under one head, designated as the "director," many clerical and executive matters could be handled more economically and expeditiously. It became certain that some sort of a consolidation law would be passed by the legislature. Pharmacists therefore confined their efforts to having certain outstanding objectionable features eliminated from the proposed law as originally submitted. In this respect we were partially successful at least. After the law was enacted and consolidation put into force, we withheld judgment and gave our support and coöperation in an effort to make the new plan a success. Under Governor Lowden, with Francis W. Shepardson, a broad-gauge, high-class educator as director, and F. C. Dodds, efficient and honest, as superintendent of registration, the work of the department, including examinations, was conducted in a creditable manner to the fullest extent possible under such a plan.

When the Illinois System Broke Down

With the change of political administration in 1921 came also changes in the personnel of the men in charge, which brought to the surface the weaknesses of consolidation.

Through the lay and pharmaceutical press you have been told something of the exposé in Illinois. I shrink from holding a postmortem over my native state—a state which has had a glorious history and which has been in the van of many progressive movements. It has always been active in matters pharmaceutical, and I think you will concede has contributed its share to the advancement of our profession.

But to get to the point I want to discuss I must sketch, very superficially and very hastily, what occurred.

First, to the credit of pharmacy and pharmacists, let me say that the Pharmacy Examiners themselves in the state of Illinois were not accused of being responsible for, or of knowingly aiding in the dis-

* See editorial on page 414 of the December 1928 issue of this journal. See also page 50 in this issue.

† Address delivered before meeting of the California State Pharmaceutical Association at Catalina Island, May 23, 24, and 25, 1922.

graceful proceedings, although they had begun to suspect that all was not well.

Medical Board and Other Irregularities Under the Departmental System

It has developed that the pharmacy examinations had but a minor part in the plot; medicine, nursing, veterinary medicine, dentistry, chiropractic, osteopathy, etc., etc., were all involved—although the "big killings" appear to have been made in medicine.

The irregularities consisted, so it appears, in supplying advance copies of the state board questions to individuals conducting certain "quiz" schools who either sold them to their students direct, or "fed" them to the students in short review courses of a week or ten days preceding examination. The fees charged ranged from $200 to $500. Lists of names of men who had failed in examination were supplied to these schools and a high-pressure advertising system was employed in getting them to come in.

In addition, persons who were not eligible to take the examination because of lack of experience, college graduation, etc., had their admission credits "fixed up" so they could take examination, the prices paid ranging from $500 to $2500 for the privilege of taking the medical examination—this in addition to the fee paid (usually $200) for entrance to the quiz course.

Cases are also reported where candidates, after receiving notice of failure in examination, would be visited by a "fixer" and if the sum demanded was paid, a license would come in due time, but the names of such persons would not be included in the list of successful candidates issued by the Department of Registration and Education for publication.

The central figure in the scandal is ———, director of the Department of Registration and Education, who had surrounded himself with relatives and confidants, both inside and outside of his office, and who evidently thought himself sufficiently entrenched so that it would be impossible to implicate him. However, indictments have been secured against Mr. ———, his son-in-law and several others, and date of his trial has been fixed for June 5.

One naturally seeks the underlying reason why such a thing could occur in any state, and many explanations are offered. The man on the street says, "Rotten politics." The Democrats say, "Republican administration." The pacificists—and some others—say, "Aftermath of the war." Others accuse Mr. Volstead, and Lucy Page Gaston probably blames cigarettes.

One thing is certain, Illinois has struck a piece of bad road, and it is a question how long before we can get out of the mire.

Reasons Why Professional Boards Should Not Be Placed in a Vocational Standards Department

I think we might begin our argument against consolidation with this premise:

First: The members of any profession are more responsible for the condition of that profession at any time than the people of the commonwealth outside of that profession.

Second: Once you undermine or remove the responsibility from the members of the particular profession, the standing of that profession will deteriorate.

To be a little more specific: I maintain that the pharmacists of a state are more responsible for the condition of pharmacy in that state than are the other citizens, and that they owe it to citizens at large to protect all citizens from incompetent pharmacists.

Still further on this point. With the consolidation of boards under one head, the various professions lose interest. The pharmacists feel that the responsibility for their profession has been taken out of their hands and put into the hands of a "trust"—a one-man power. Physicians, dentists, nurses, etc., the same. Somehow they do not have the pride in nor feel the same responsibility for the standards and ethics of their respective professions as they did when it was exclusively in their own hands, with one of their own number at the head.

What Happens Under the Consolidation Plan

If such a condition—consolidation—is brought about, whereby pharmacists of a state lose interest in pharmaceutical matters, from that day on pharmacy will deteriorate and the public, because of this loss of control, will not receive the protection to which they are entitled, and your business, professional and ethical standards will retrograde. Under the consolidation plan the professions are powerless to preserve their integrity if the powers that be will otherwise. We proved this in Illinois when the Board of Pharmacy Examiners, attempting to maintain the honesty of our examinations and registrations, found themselves powerless to do so, and withdrew for the purpose of fighting from the outside what could not be prevented from within.

I maintain that the pharmacists themselves are responsible for the type of pharmacists we have today, tomorrow and twenty-five years hence—that your influence upon your schools, boards, associations, etc., absolutely determines what kind of pharmacists the state enjoys—or endures. What is true of pharmacy, is true of medicine, dentistry, nursing, etc.

Not only that, but the passage of every state pharmacy law designed for the protection of the public as well as laws governing the progress of the profession, has been secured through the efforts of the pharmacists themselves.

If by legislative enactment you remove or lessen the responsibilities of members of a profession for its standards, you remove one of the main props which support this standard and a gradual lowering will result, with resultant bad effects to lay citizens and to the professions involved.

I contend that the consolidation of boards under one head has, and will continue to alienate the direct personal interest and accountability which pharmacists have held for their profession. This also applies to physicians and dentists. Under such a plan, pharmacists feel that the matter has been taken out of their hands; that they are powerless to help or hinder; that they cannot be held liable for what happens.

Centralization of Power Into Lay Hands

These consolidation laws, so far as I know, all place the administration of the law in the hands of a nonprofessional man. I mean a man not belonging to any of the professions covered by the law. Usually he is a politician, not schooled in nor appreciating the ethics, standards, or relations of the various professions to the public. In other words, he is unable to appreciate the pharmacists', dentists' or physicians' viewpoint, which, after all, is important in order to accomplish progress for these various professions, as well as to properly safeguard the public, by protecting the public from incompetent or off-color practitioners in these professions.

Principle of "Outside Control" Is Wrong

Some of you may wonder, if a nonprofessional man is so apt to prove unsatisfactory in the position, why a member of one of the professions cannot be placed at the head of the department. Why not under the Board of Health with a physician at the head, or if a separate department of registration, a pharmacist, physician or dentist at the head? The reasons are plain. None of these propositions is sound in principle and can therefore *not* succeed. If you place a man of one profession—let us say a physician—over groups of various professions—pharmacy, dentistry, nursing, veterinarians, "other practitioners," etc.—you have a clash of principles and interest at once. Old human nature must not be forgotten even in legislative matters. Do not misconstrue my meaning. It would be just as bad to place a pharmacist, dentist, veterinarian, or nurse at the head of such a department. The principle is wrong, that is all. No matter how broadminded or able this man might be, his sympathy would just naturally be with the men of his own

profession. Don't you see, then, that it would automatically—human nature again— alienate the sympathy and perhaps the support of members of the other professions? Cannot you just hear irate pharmacists, dentists, etc., who take umbrage at the chief, say, "What does a physician know about dentistry? What does he know about pharmacy? What does he know about any profession but his own?"

A Department Director Does Not Add Strength

I have looked at this problem from every angle I could conceive, and so far as I can see at this time, the basic fault of consolidation of examining boards lies in the placing of one man at the head. Whether the head of a department or bureau of registration happens to be a professional man or a nonprofessional man, makes little or no difference. Things may go along fairly well for a time, but the prevailing custom of changing heads of departments or bureaus, when political rule changes in a state, makes it impossible to guard against the probability, sooner or later, of a condition such as exists in Illinois at this time.

We have to look at the fundamental principles underlying a proposition. It is a function of the state, a duty to the people of the commonwealth, to see to it that incompetents are not permitted to practice any of the professions. It is also a duty of the state to see to it that the duly qualified are not prohibited from practicing. It is a further duty of the state, after having enacted proper laws, to influence, through its examinations, the standards of education so that there will be a steady rise in standards of licensing men in all the professions, to the end that increasingly good service may be rendered to the public through better trained practitioners.

Kind of Personnel Which Should Be On Professional Boards

To accomplish these aims, you must have on your examining boards men of foresight, education and ability. Men who grasp the essentials of the problem. You must, in the first place, have conditions such that men of the proper caliber will accept such appointments as examiners. Secondly, conditions of work must be such that those men will give the best there is in them. Under the old order—separate boards system—the state pharmaceutical association in the various states, with few exceptions, by vote recommends to the Governor the names of several pharmacists as being qualified and eligible for appointment as members of the Board of Pharmacy. While the Governor may—and sometimes does—go outside of this list for his appointees, nevertheless the pharmacists of the state have an opportunity to sift out and offer for the Governor's selection, men whom they regard as qualified for the responsibilities of examiners. These appointees are responsible to the Governor only, and are usually appointed for a term of years, and replaced only for marked cause or on expiration of the term for which they were appointed. The virtual head of the board—either president or secretary—is a pharmacist of education and experience, who knows the standards of his profession, who has a jealous regard for its protection and that of the public as well, and for the good name of the pharmacist in general. A somewhat similar system was in vogue some years ago in several states, in relation to medical boards. California formerly used such a plan.

In Consolidation Plan, the Governor Appoints the Director

Under the consolidation plan the Governor appoints a "director" who is "boss" of the department. This director appoints the examiners. In Illinois, Mr. ———, director of the Department of Registration and Education under the present administration, who was recently indicted on charges of illegal trafficking in professional licenses, places a construction on the law to suit his own liking and convenience, and appoints examiners for one examination at a time! The uncertainty of continuing as an examiner under such a plan does not make for efficiency, to say the least.

Results Which Could Happen With a Poor Department Director

If you get as director of your consolidated department a man whose duties are beyond his capacities, and the temptations of his position beyond his moral strength, who is subject to the pressure of personal or political interests, who uses his office to further his personal or political ends, you can readily see what this will lead to—you will have chaos. With the changes in the political tide of any state, you are, I believe, bound in time to draw such a man.

Results With a Poor Separate Board Chairman

You may think that you might get such as a member or head of a board, under a separate boards plan, or under any system. That is quite true, but if his sphere of influence is limited to any one board or profession, his possibilities for harm are limited to one profession, and even then, he is likely or almost certain to be held in check by the decent members of the board. Furthermore, the possibilities for loot are not so great and the temptation thereby lessened. I am talking about pharmacy, but I have in mind also the other professions, such as medicine or dentistry, for which licenses are granted.

There have no doubt been sporadic cases of irregularities in the issuing of certificates in the various professions in different states. Influences of one kind or another, and mayhap the crossing of the palm, have been instrumental in securing certificates which the holder could not obtain on a straight-out examination. But these are rare cases and in no way compare to the wholesale business Illinois has experienced, which, fortunately were of short duration—no thanks to consolidation.

No Real Money Economy in the Consolidated Board Plan

I am aware that in theory this consolidation plan is assumed to effect economies of administration. But in Illinois at least, these economies have yet to be proven. The fees paid by pharmacists for renewal, certificates, examinations, prosecutions, etc., in most states, defray all expenses of administering the pharmacy laws. The taxpayer, therefore, with few exceptions, is not called upon to contribute to the support of pharmacy, or of boards, such as those of medicine and dentistry.

How to Prevent Deplorable Conditions of Consolidated Boards

The preventive for the conditions I have described can, it seems to me, be put in two simple sentences. First: Those states which still have individual boards should stick to them. Second: Those states which have the consolidation plans should repeal the laws and go back to the old separate boards plan or a modification of it.

To accomplish this you must arouse your members to the true conditions. Physicians, dentists, and pharmacists who love their professions will fight for decent standards if they understand the issues at stake.

Not only must pharmacists exert themselves, but you must, if possible, work with the other professions, particularly those of medicine and dentistry.

There seems to be a tendency on the part of medical men to consider themselves apart from this question of examination. I would be the last man in pharmacy to criticize our physician brothers, the men who write our prescriptions. But I cannot agree that it is for the welfare of either public or physicians for

the latter to assume an attitude of indifference toward the administration of medical laws or the licensing of physicians. What chance does the public have in protecting itself against bad laws or vicious systems relating to any of the professions or the administration of same unless the professions themselves take a hand.

However, I do not believe this apathy to be general, and I want to repeat that we need the coöperation of all the professional men in repealing untoward laws or retaining those we have which are good. The pharmacists alone cannot do it. Suppose in this state the pharmacists want individual boards and the other professions are indifferent in the matter, but the politicians want consolidation. Well, under those conditions you will get consolidation. So I say, you must secure the coöperation of the other professions, such as medicine and dentistry.

Interests of Medicine, Dentistry, and Pharmacy Are One and the Same in These Issues

In a broad sense, our interests are inseparably linked, both as regards the progress of our respective professions and our mutual responsibilities to the public. Pharmacy has taken the initiative in securing legislation beneficial to, and in opposing legislation detrimental to the public and the profession. Where we merge with other professions, as we do when the consolidation of boards is an issue, I think we must take the initiative in securing the coöperation of the other professions involved. Therefore I implore you to leave no stone unturned to secure the assistance of your physicians and your dentists so that through their state organizations they may be aroused to the situation and made to see that their own welfare demands that they take aggressive action. Do this individually, and also do it as an association. Campaign for it, electioneer for it, fight for it! In that way you will get results. The protection of the public and the welfare and dignity of your profession are worthy of every effort you put forth.

In Conclusion

In closing, it may strike you as a bit incongruous that I should come halfway across a continent to tell you what a vile state I come from.

I come to a state which I think approves the Oriental maxim, "See no evil, hear no evil, speak no evil." No Californian, I believe, would admit there is anything wrong with the Golden State. I may add that the rest of the world inclines to agree with him.

However, just as it is wise to advertise good, there are times when it is wise to advertise the evil that exists, and if in what I have said, Illinois appears as one of the black spots on the map, I beg to assure you that it is a recent thing, and that the forces for right within the state hope to quickly change it.

I review the conditions in Illinois with a good deal of embarrassment, but I do it that other states may be warned—that our experience may not be repeated elsewhere.

"An Ounce of Prevention Is Worth a Pound of Cure"

In the matters of any profession, state lines should be abolished, and what occurs in Illinois is as important to you as though it happened in California. It is your duty to use your influence to maintain decency in our profession from coast to coast—from the Great Lakes to the Gulf, and to unite with affiliated professions toward the same end, as regards their own responsibilities.

I thank you for your courteous attention, and know from the temper of the people of California that where right is at issue you will not be found wanting.

PRESS QUOTATION EXCERPTS, DEALING WITH TOPICS DISCUSSED IN ARTICLE ON "CONSOLIDATION OF PROFESSIONAL BOARDS" BY H. C. CHRISTENSEN

The following excerpts are from articles in issues of the Chicago *Daily Tribune* of the year 1922, and explain themselves. The headings given are the captions to the articles from which the excerpts have been taken:

Ring of "Fixers" Turns "Quacks" Out on Public—Traffic in Permits to Practice Bared—By Parke Brown.—"Under the wing of one of Governor Len Small's most important departments, a ring of 'fixers' is trafficking in physicians' licenses, pharmacists' certificates, and similar permits issued by the state of Illinois.

"It has been established that this ring has fixed prices for the following:

"For bringing about the issuance of a license to practice medicine and surgery, although the applicant has not the collegiate training required by law.

"For obtaining osteopaths' or chiropractors' licenses after a 'cramming' course of from two to six weeks.

"For obtaining pharmacists' licenses for those who know that it is impossible for them to pass an examination.

"For obtaining veterinarians' licenses for men who have already failed in examinations.

"And it is said that the gang's operations have extended to the issuance of other licenses that are under state control."—Excerpt from the *Chicago Daily Tribune* of Monday, March 20, 1922.

* * *

Eight Thousand Five Hundred Fifty Dollar Drafts Paid for State Licenses Found—All Made Out to Wife of Director Miller.—"Following up the evidence of graft in the issuance of physicians' and druggists' licenses by Director W. H. H. Miller, a member of Governor Small's cabinet, State's Attorney Crowe yesterday obtained documentary proof in support of the oral testimony.

"In one bank Samuel M. Hamilton, assistant state's attorney in charge of the investigation, found cancelled drafts amounting to $8550, which was the combined purchase price of only one batch of the state permits to practice medicine and pharmacy which have been bartered during the last six months. These payments ranged from $200 for a pharmacist's certificate, to $2500 for a physician and surgeon's license.

Payable to Wife.—"But scarcely less sensational than this was the discovery that the drafts—instead of being made out to Director Miller—were made out to 'Cloah M. Miller,' his wife. Nearly all of the $8550 was sent her during the month of March and the entire sum since January 1 of this year.

"But this sum is said to be only a small part of the total that is being traced as payments for licenses issued in violation of the law. This batch of cases is a part of those known to Dr. Samuel Fomon, who testified before the grand jury that he had been collecting evidence against Miller and his ring of fixers for several months.

"And details of the cases are being collected from the applicants for state examinations who paid the money to Miller or to someone representing him.

"In addition to Doctor Fomon, another important witness before the grand jury was H. C. Christensen, secretary of the National Association of Boards of Pharmacy, who first brought the charges against Miller's department to the attention of the State's Attorney Crowe."—Excerpt from the *Chicago Daily Tribune* of Saturday, April 8, 1922.

* * *

Convict Miller as Grafter—Jurors Find Appointee of Small Guilty—Doctor Bourque Also Is Sentenced.—"William H. H. Miller (Lundin-Thompson), former

member of Governor Small's cabinet as head of the department of registration and education, was found guilty yesterday of selling physicians' and pharmacists' licenses to persons unfit to receive them, of raising examination grades, and of selling questions in advance of the state examinations.

"The jury in Judge Oscar Hebel's court, where the case was tried, placed Miller's penalty at a fine of $1000.

Doctor Bourque Fined.—"Dr. N. Odeon Bourque, head of a 'quiz' school where doubtful candidates prepared for the examinations, was fined $250. K. A. Fries, Miller's son-in-law and a former official in the department, was found not guilty.

"'A compromise verdict,' it was generally termed in the Criminal court. It was rumored that the jury had early decided on a finding of 'guilty' against Miller when they were locked up for the night last Saturday. One juror, whose name remained unknown, is said to have insisted, however, that the former director be let off without the penitentiary sentence to which he was made liable by the charge contained in his indictment.

"The maximum sentence, which was demanded by the prosecutors for the state, Samuel M. Hamilton and Milton D. Smith, was five years in the penitentiary and a fine of $2000.

Victory for People, Crowe Holds.—"Despite the leniency of the jury, a leniency I feel misplaced, Miller's conviction is a signal victory for the people," said State's Attorney Crowe on hearing of the verdict. "It will be a needed lesson, teaching the sacredness of the office to which is entrusted the duty of supervising the fitness of our physicians and druggists. What harm has been wrought by the host of incompetent men and women who, the evidence showed, have been let loose to minister to the sick will never be known."—Excerpt from the *Chicago Daily Tribune* of Monday, January 29, 1923.

NEWS

Southern California Golf Association.—Sixty members of the Southern California Medical Golf Association played and dined at the Hollywood Country Club, December 19, 1928. Winners were: Class A, Louis Felsenthal (gross); H. Schiffbauer (net). Class B, H. W. Spiers (gross); Clarence Johnson (net). Class C, A. Blatherwick (gross); Homer Walker (net).

The association was organized four years ago with the election of the following officers: William H. Kiger, president; Clarence Toland, vice-president; C. H. Weaver, secretary-treasurer. The officers elected to serve the next four years are: Clarence Toland, president; C. Hensley, vice-president; John W. Crossan, secretary-treasurer; Albert Moore, team captain; William Olds, chairman handicap; C. H. Weaver, chairman tournament; and John W. Shuman, publicity.

Ling Foundation Medal to Dr. Kress.—Press reports state that on December 20, at one of the sessions of the Los Angeles Teachers' Institute, Dr. George H. Kress was presented with a Ling Foundation Medal of the Silver Grade, for "distinguished services for the health progress of school children." Dr. Kress has been for some years chairman of the advisory eye, ear, nose and throat board of the Los Angeles School District.

Popular Medical Lectures.—The Stanford University Medical School announces the forty-seventh course, to be given at Lane Hall, north side of Sacramento Street near Webster, San Francisco, on alternate Friday evenings, eight o'clock sharp. All interested are cordially invited to attend.

Friday evening, January 4, 1929: "The Relation of the Inorganic Elements to Health and Disease"—Carl L. A. Schmidt, Ph. D.

Friday evening, January 18, 1929: "Present Aspects of X-Rays and Light in the Treatment of Disease"—W. Edward Chamberlain, M. D.

Friday evening, February 1, 1929: "The History of Spectacles"—Hans Barkan, M. D.

Friday evening, February 15, 1929: "Facts and Fancies of Rheumatism"—Leonard W. Ely, M. D.

Friday evening, March 1, 1929: "The Historical Development of Anesthesia"—Chauncey D. Leake, Ph. D.

Friday evening, March 15, 1929: "A Study of the Cost of Medical Care"—Ray Lyman Wilbur, M. D.

Southern Pacific General Hospital Meeting.—The regular monthly staff meeting of the Southern Pacific General Hospital was held on Wednesday, December 5, at 8:15 p. m. Doctor Gill, intern, presented an abstract of the interesting literature for November; essentials of the clinical and pathological data of the fatalities for November; Dr. J. Wilson Shiels, "A General Survey of Cardiology"; Dr. L. B. Crow, a roentgen demonstration of Brodie's abscess, syphilis of the lung, and fracture of the skull.

The Pottenger Sanatorium, Monrovia, celebrated on December 5, 1928, the twenty-fifth anniversary of its opening. Ex-patients and many friends of the institution had been invited to attend a reception from eleven till two o'clock. At twelve o'clock a buffet luncheon was served on the lawn.

In the evening a dinner, followed by a program, was given to former associates and assistants, members of the Trudeau Society, and other local physicians.

Meetings Board of Medical Examiners of California.
February 4 to 7, 1929—Independent Foresters Hall, 1329 South Hope Street, Los Angeles.

July 8 to 11, 1929—Independent Foresters Hall, 1329 South Hope Street, Los Angeles.

July 15 to 18, 1929—Native Sons Hall, 414-430 Mason Street, San Francisco.

October 21 to 24, 1929—State Capitol, Sacramento.

Oral examinations for reciprocity applicants will be held March 13, 1929; June 12, 1929; September 11, 1929; December 4, 1929, in room 623, State Building, San Francisco, at 10 a. m., and in room 931, Associated Realty Building, Sixth and Olive Streets, Los Angeles, at 10 a. m.

No examination given unless completed application and fee has been filed in Sacramento office at least two weeks prior to the date when applicant will appear.

No examination will be given unless applicant notifies the Sacramento office at least two weeks in advance, stating whether he will report in San Francisco or in Los Angeles.

No oral examinations will be held at regular meetings.

Oral examination required when application is based on a state certificate dated ten or more years before date of application.

Scope and Purpose of the Pan-Pacific Surgical Congress.—In August, 1929, from the 14th to 24th, approximately, the Pan-Pacific Union, through its president, the Governor of the Territory of Hawaii, is calling a Pan-Pacific Surgical Conference to meet in Honolulu. The union has held a number of successful conferences of leaders from Pacific lands on the subjects of Science, Education, the Press, Commerce, Food Conservation, Fisheries, and most recently, August, 1928, the first gathering of Pan-Pacific women was convened with a program of Health, Education, Government, Industry and the Professions, and Social Service.

Following precedent, the Secretary of the Interior of the United States, under whose direction are classed the affairs of the Territories of Hawaii and Alaska, has been requested to ask the State Department to transmit the invitations of the union to the different countries of the Pacific through their ambassadors and representatives in Washington. In the past the State Department has done this with the explanation that the conferences are not official or called by the United States Government, but that the invitations to take part in conferences are placed before the governments at the request of the Pan-Pacific Union.

Establishment of Memorial Chest Clinic.—The board of directors of Mount Zion Hospital are in receipt of a fund of $5000 given to the hospital by Mrs. Abraham Lincoln Brown for the establishment and maintenance of a chest clinic in memory of her husband. The clinic is to be known as "The Abraham Lincoln Brown Chest Clinic." The new department will consist of three branches: a pulmonary clinic, which has already been in existence for several years; an allergic clinic for the treatment of asthma and allied conditions; a chest department within the hospital for the diagnosis and treatment of all thoracic conditions, particularly surgical.

Of late years chest surgery has made tremendous advances, so that operations on the lungs can be performed today with comparative safety. These operations will effect cures in patients who heretofore have been doomed to early deaths.

A diagnostic group has been formed consisting of Doctors Harold Brunn, William C. Voorsanger, A. Lincoln Brown, and Fred K. Firestone, who are all particularly well trained in the field of pulmonary diagnosis and treatment.

The services of the clinic are to be available to all, inside and outside of San Francisco, either on a free or pay basis. Physicians desiring the services of this new department may refer their patients to the group in charge for diagnosis, no medical fee being required.

A completely equipped allergic clinic for the treatment of asthma is now in full operation. Facilities for complete x-ray and bronchoscopic examinations in specially designed rooms are now being installed.

The donor of the fund has given the committee in charge assurance that more funds will be available as needed. The purpose of the fund is not only for the purchase of apparatus and maintenance of the department, but for subsidizing beds for worthy patients requiring diagnosis or surgical treatment.

Patients from out of town desiring to avail themselves of these opportunities should first consult their local physician for reference to the clinic.

READERS' FORUM

San Francisco, California,
December 28, 1928.

Re: Cyril von Baumann

Emma Pope, M. D.; George Kress, M. D., Editors.

Dear Doctors: We are enclosing herewith copy of a letter just received with a rubber-stamp signature—H. W. Moore, M. D., P. O. Box 1376, Pittsburgh, Pa.—alleging that Cyril von Baumann is borrowing money from doctors throughout the country, and is headed this way.

Reference to the *Journal of the American Medical Association* of October 27, 1928, page 1298, under "South Carolina," reads as follows:

"Cyril von Baumann's License Revoked.—The State Board of Medical Examiners of South Carolina advises that at a meeting July 12, license No. 1691, issued December 2, 1926, to Cyril von Baumann, was revoked, annulled and canceled. It appears that on application for a license, von Baumann claimed to have graduated from the University of Heidelberg in 1914. An inquiry from the headquarters of the American Medical Association brought a reply from the University to the effect that a diploma had never been issued to anyone in the name of Cyril von Baumann in the period from 1910 to 1915, and that no student by that name had been matriculated during that time. The A. M. A. has had inquiries about von Baumann from different parts of the country.

His last known address was Bloomington, Maryland."

We believe it would be a wise procedure to have a notice placed in CALIFORNIA AND WESTERN MEDICINE warning the doctors of California against imposition.

Very truly yours,

C. B. PINKHAM, M. D.,
Secretary-Treasurer.

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Volume II, No. 1, January, 1904.

From some editorial notes:

. . . A New Year.—The journal is more than glad to felicitate every member of the society upon the completion of its first year of life, and to extend to all its heartiest good wishes for a still more profitable New Year. From a mere child in long clothes, the society has grown in one year to a pretty vigorous youth, representing the potential strength of something over one-half of the eligible physicians of the state. Its growth has been phenomenal and is increasing with marvelous rapidity. . . .

. . . We are considering the addition of physicians of Oregon and Washington, and making the Register a Tri-State Register. What do you think of the idea? The compliments of the season have been earned; we hope they will be even more deserved this time next year. . . .

. . . Pithy Papers.—The editor has attended several meetings for the organization of county societies, and has been struck by one thing more particularly than any other—the desire of the physicians who get together to form such societies to omit the long, tiresome papers compiled from textbooks or journals, and to confine the work of the society meetings to short, pithy papers or reports that deal with practical questions and actual experiences. . . .

. . . A Vital Question.—One of our youngest component societies—Merced County Medical Society—discussed, at its first meeting, one of the most vital questions in the whole range of medicine: The status and abuse of the secret proprietary preparation. . . . . A safe rule to follow is to solely prescribe perfectly known drugs and medicines; and if a manufacturer declines to advertise the ingredients or the formula of his preparations, conscientious physicians can do nothing less than refuse to prescribe them. . . .

From an article on "Cases of Tuberculosis of the Genito-Urinary Tract, with Remarks," by George Chismore, M. D., San Francisco:

. . . Improved methods of diagnosis, together with a clearer recognition of clinical symptoms, have brought us to the conclusion that tuberculosis of the genito-urinary tract is far more frequently encountered than was formerly believed. . . .

. . . Treatment.—I have but little to offer in regard to treatment, regarding it as wholly expectant. . . .

From an article on "Peritoneal Adhesions—Their Symptomatology, Pathology and Prevention," by E. E. Kelly, M. D., San Francisco:

. . . Asepsis has been the inspiration of much bad surgery. It has made safe, as far as the life of the individual is concerned, many operations which were formerly attended with a very high mortality. It has stimulated the performance of many operations that were formerly considered unjustifiable. A low mortality has become synonymous with good surgery. Many a victim of the scalpel is suffering more from the results of his operation than he did from his disease, while his case is used to swell the statistics of "successful operations" of the enterprising aspirant for surgical honors. . . .

From an article on "What is Conservatism in Mastoiditis?" by W. S. Fowler, M. D., Bakersfield:

. . . The position I take is that mastoiditis is and can be only a surgical disease, and that its treatment

*** This column aims to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.**

differs in no way from other surgical diseases of similar nature, and that conservative treatment consists in early and thorough operative procedure. . . .

From an article on "Meeting of the Southern California Medical Society, Held at Redlands, December 2 and 3, 1903" (reported by H. P. Hill, M. D.):

. . . President John C. King of Banning called the meeting to order and introduced Dr. T. M. Blythe, president of the local society, who delivered a short address of welcome. . . .

. . . A banquet was tendered the association by the Redlands Medical Society in the evening. D. C. A. Sanborn of Redlands introduced Dr. Fitch Mattison, who acted as toastmaster, and a very pleasant evening ended the thirty-second regular semiannual meeting of the Southern California Medical Society. . . .

Other Society Meetings.—Alameda County. Meeting called to order at 8:30 p. m., Tuesday, December 8, Doctor Hamlin presiding.

The first paper was read by Dr. F. L. Adams, the subject being "Surgical Treatment of Perineal Lacerations." . . .

Alumni Association Medical Department University of California.—The Alumni Association of the medical department of the University of California held a special meeting on December 1, 1903, Dr. George E. Ebright presiding.

Fresno County.—It becoming known that the Board of Examiners was without funds to defend itself in the suits brought by Doctor Hodghead and others to have the board ousted, it was unanimously carried that the sum of $50 be contributed by the Fresno County Medical Society for the purpose of assisting in defraying a part of the expense of defense. . . .

Los Angeles County.—Dr. LeMoyne Wills moved that $200 be sent to San Francisco as this county medical association's contribution to the "Medical Defense" fund, to be used in defending suits brought against the Board of Examiners. It was seconded and carried.

The following letter was received:

Pasadena, Cal., November 10, 1903.

To the Los Angeles County Medical Association, Greeting:

At a meeting of the Pasadena Medical Society, held this evening, it was voted unanimously that we adopt the Constitution and By-Laws of the Los Angeles County Medical Association and become the "Pasadena Branch" of the same association. Charles D. Lockwood, President. J. E. Janes, Secretary. . . .

Monterey County.—Organized December 9, 1903. . . This is the eighth county society that has been organized through the efforts of the trustees, or rather, through the work of the editor, at the request of the other members of the Board of Trustees. In every case it has been found that the physicians of the counties were desirous of having county organizations, but doubted the possibility of perfecting and maintaining an organization. . . .

Sacramento County.—The Sacramento Society for Medical Improvement met in regular session at the office of Dr. H. H. Look on November 24. Dr. H. L. Nichols occupied the chair during the first part of the meeting, and later Doctor Ross, the president, presided. . . .

. . . The society then indulged in a free discussion of vaccination and kindred subjects suggested by the present smallpox epidemic.

Dr. J. H. Parkinson said that as physicians we should impress upon the public that quarantine and disinfection are only secondary matters, and that the proper method of dealing with smallpox is by vaccination. We know positively and absolutely that the disease can be prevented by thorough vaccination, that the preventive measure is harmless, and that we should earnestly impress this upon the people. . . .

. . . Dr. W. J. Hanna said that while in the Philippines he had charge of several divisions of the troops as a medical officer, and that the orders were that all soldiers should be properly vaccinated. In Cavite, where such precautions were not taken, smallpox existed to a large extent, but in the army there was hardly a case. He believed careful precautions should be taken in vaccinating, so that no complications should arise that could be prevented, and in this manner the people would favor vaccination rather than antagonize it. . . .

Santa Cruz County.—Organized December 22, 1903. In response to a call sent out by the organizer appointed by the Board of Trustees, the following physicians of Santa Cruz, at 8 p. m. on the 22d of December, and by motion requested affiliation with the state society: Doctors Bush, Christal, McGuire, Hedgpath, Pope, Phillips, Priestley, Vaux, and Watters. . . .

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By C. B. PINKHAM, M. D.
Secretary of the Board

News Items, January, 1929

Dr. Charles F. Applegate, prominent nerve specialist, with offices in the Pacific Mutual Building, today was arrested on a charge of illegal possession and sale of narcotics in violation of the State Drug Act, the police reported. Doctor Applegate, who is sixty-three years of age, sold $7 worth of morphin to a police operative, according to R. H. Dundas, special agent of the State Pharmacy Board, who directed the Police Narcotic Squad in the investigation.—*Los Angeles Herald,* November 19, 1928.

We understand steps are being taken to pass a measure at the coming legislature for the purpose of issuing licenses to those who join the "California State Advanced Therapeutists," which filed articles of incorporation with the Secretary of State November 22, 1928, among its objects being "to establish high standards of ethics of mutual protection . . . to put forth an honest endeavor to establish legal rights for advanced therapeutists," the principal place of business being in San Francisco.

Dr. Percy Purviance, head of the Berkeley Chiropractic College, announced here today that a motion for a new trial in the suit which resulted in the cancellation of the franchise of the college will be filed in the Oakland Superior Court. The franchise was ordered canceled on November 28 by Judge J. J. Trabucco on petition of the State Board of Chiropractic Examiners. The board charged in its complaint that the Berkeley Chiropractic College had granted diplomas to persons wholly unqualified to receive them. Doctor Purviance claimed that the order issued on November 28 was in direct violation of a permanent injunction issued on March 16, 1926, in the San Francisco Superior Court.—*Berkeley Gazette,* December 6, 1928.

In the list of forty-four graduates of medical schools from all parts of the world who successfully passed the October, 1928, written examination given by the

Board of Medical Examiners, the highest mark was obtained by Dorothy Johann Starks of Stanford University Medical School, who made the general average of 92 7/9 per cent.

"Guilty of manslaughter" was the verdict returned last night by a jury after deliberation for more than six hours in Superior Judge Aggeler's court against Dr. Frank L. Burleigh, Burbank physician, charged with the murder of his janitor, Jack Stachell, on October 17 last. The sentence of from one to ten years in the state penitentiary will be pronounced Friday morning at 9:30 by Judge Aggeler. . . . Burleigh was given several tests following the slaying to determine whether he was unbalanced mentally or intoxicated, and doctors reported that he had been under the influence of liquor.—*Los Angeles Times*, December 5, 1928. (Previous entry, September, 1926.)

"Under the California law a corporation cannot practice dentistry. Under this ruling made yesterday by Attorney-General U. S. Webb, the State Corporation Department will deny an application from Doctor 'Painless' Parker of San Francisco for a financial reorganization of his system. Attorney-General Webb's ruling was made in response to a request by Corporation Commissioner J. M. Friedlander. Pending before Friedlander is a request from the Parker Dental System Company, a Delaware corporation, for authority to sell fifteen thousand shares of stock to holders of the Associated Dental Supply Company owned by Mrs. Frances E. Parker, two dentists, and to the public at large. Mrs. Parker is the wife of 'Painless' Parker. Except for two qualifying shares she owns the Associated Dental Supply Company, a California corporation, outright. This Delaware corporation would license dentists to operate under the Parker system. . . . Mrs. Parker, through her stock holdings, would be the manager of the corporation; but the California law says that none but a licensed dentist may practice dentistry or manage a dental office. Mrs. Parker is not a licensed dentist and neither is the corporation. . . . " This opinion is of interest in view of the frequent contention that corporations cannot practice medicine. (See "News Items," November, 1926, and April, 1928.)

According to news item printed in the San Francisco *Chronicle* of November 27, 1928, Governor Young named Dr. C. A. Herrick of San Francisco and Dr. John M. Blodgett of Lodi as members of the State Board of Dental Examiners. Both of these dentists have served for many years on the dental board.

Further investigation of J. Jaques Fabian, mentioned in "News Items," discloses that said individual was reported to have died many years ago in the East and hence our interest is aroused in the individual who recently was reported as holding the Northwestern University Medical School diploma issued J. Jaques Fabian in 1907.

Charging that her erstwhile guardian mismanaged her estate during the term of his office, Mrs. Ernestine Engelhardt, aged Oakland widow, filed suit in Superior Court yesterday seeking a final accounting of the property (San Francisco *Examiner*, December 13, 1928). (Prior reference, "News Items," October and December, 1927; January and May, 1928.)

Trial of Dr. Edward C. Fortin, charged with violation of the state chiropractic law, by advertising himself as a physician and failing to add the letters "D. C.," will be set tomorrow in Municipal Judge Sheldon's court. Complaint against the physician, whose offices are in the Loew State Building, was sworn out by Bert Humason, special agent of the State Board of Chiropractic Examiners. Humason said Doctor Fortin's license permitted him to practice only as a chiropractor while the physician actually was operating in extended medical lines.—*Los Angeles Express*, November 21, 1928.

According to report, Rose Guaranga, midwife, Oakland, on November 27, 1928, pleaded guilty to a violation of the Medical Practice Act and was placed on probation until May 15, 1929.

Dr. Ottoman Zar Adusht Hannish, self-styled "Blessed Master" of a cult of asserted Sun Worshipers, was being questioned by police today regarding the disappearance of Mrs. Hedwig Arens, a member of the sect. (Press dispatch dated Los Angeles, November 9, printed in the San Francisco *Call* of the same date.) (Previous entry, June, 1928.)

Lee Shi Kim, local Chinese doctor, is shy $250 as a result of his arrest yesterday by Inspector R. M. Noble of the State Board of Medical Examiners on the charge of practicing medicine without a license.—*Salinas Index*, November 16, 1928.

In a news dispatch dated Kansas City, Missouri, December 7, printed in the San Francisco *Call* of the same date, was related: "Suspension from the Missouri State Medical Society of Dr. A. L. Skoog, widely known psychiatrist, was sustained in a report made public here today by the Board of Censors of the Jackson County Medical Society. Doctor Skoog was banned because of his defense testimony in the William Edward Hickman case in Los Angeles."

Dr. Ramon Tjarks, sixty-two, chiropractor, held a belated Armistice Day celebration by himself yesterday. It may have been that business was dull and he was merely trying to keep in practice. . . . The chiropractor's office showed evidence of having met with foul play. . . . Failing to kick in the door of Sacred Heart Church at Fell and Fillmore streets, Doctor Tjarks contented himself with smashing a window. From then on it was a contest for supremacy between chiropractic and jiu jitsu as practiced by the San Francisco police. Jiu jitsu won, and Doctor Tjarks was booked on charges of malicious mischief and being intoxicated in a public place.—*San Francisco Chronicle*, November 15, 1928.

Notice was served on the secretary of the Board of Medical Examiners that on November 27, 1928, the action of the board revoking the license of Clayton E. Wheeler was set aside by the Superior Court in San Francisco and notice of appeal was filed.

According to reports, Iwachika Yamamoto pleaded guilty on November 22 in Los Angeles to a charge of violation of the Medical Practice Act and paid a fine of $100.

The District Court of Appeal of California, First District, Division 1, in affirming a judgment of nonsuit in the instance of a corporation conducting a department store, who employed the services of a chiropodist, said chiropodist in connection with his professional duties in said store having been involved in a suit for damages, held in a decision (261 Pacific Reporter, 328) that a corporation could not practice through a licensed person. This apparently is another decision to be added to the list holding that corporations cannot practice.

Mosquito Extermination in Mediterranean.— The Health Committee of the League of Nations has decided to start a mosquito survey of the Mediterranean countries and to begin a battle of extermination against the mosquito which transmits dengue to human beings. There have recently been more than 850,000 cases of dengue fever in Greece, with 1372 deaths.—*Medical J. and Record.*